First Copy

NOVEMBER
1933

TECHNOLOGY DEPARTMENT

e.2

FLEET OWNER

THE FERGUSON PUBLISHING CO., 90 WEST ST., NEW YORK, N.Y.

Devoted to the Better Operation and Maintenance of Truck, Bus, Taxicab, Passenger Car and All Automotive Fleets

PROPERTY OF
GRACE & HOLLIDAY
DETROIT

EDITORIAL FEATURES:

Cost-Keeping in the Fleet Shop . . . . **Page 14**
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Effecting Economies in the Fleet . . . . **Page 18**
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(A New Legal Department)

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(Question-of-the-Month)

And Our Usual Departments

It will take you less than 3 minutes to read these interesting facts about the

CITIES SERVICE POWER PROVER

...and it may help YOU...as it has 2500 other fleet operators . . . save hundreds of dollars on gasolene, oil and maintenance

What the POWER PROVER is

The POWER PROVER is a scientific machine that analyzes the exhaust gases of automotive vehicles. It does this by burning the raw, unused, wasted gasolene that is blown out through the exhaust. In 30 seconds, the result of this analysis is recorded on a large, easily read dial in terms of combustion efficiency of the engine. This is the fastest, most accurate known method of testing engine efficiency. Fleets that have just been put through their regular overhaul have been tested on the POWER PROVER and proved to be producing only 50% or 60% of their engine efficiency. Once the combustion efficiency of the engine is determined and recorded by the POWER PROVER the motor is then put through the Cities Service Tuning Routine.

The Tuning Routine

The Cities Service Tuning Routine is a scientific method of adjusting and tuning motors which eliminates all guesswork and "sight and sound" methods. It makes motor tuning an exact science. Especially designed tools and precision instruments . . . many of them exclusive with Cities Service . . . are used to make adjustments to the thousandth of an inch accuracy. Magnifying glasses and surgical mirrors are used in studying various parts of the motor. Special gauges and Neon speed timing lamps replace the old, inaccurate methods of setting gaps and checking the engine's timing.

Every important phase of engine efficiency, including spark plugs, ignition timing, automatic spark advance, circuit breaker points, coils and condensers, the wiring system, the carburetor, are gone over, step by step, and tuned and timed to manufacturers' specifications with unbelievable accuracy. And each adjustment is checked against a new reading on the POWER PROVER so that the mechanic can see the progress being made.

The Result

Once a vehicle has been put through this precise, scientific Tuning Routine it emerges with new power . . . new speed . . . new economy. Needless waste of gasolene and oil has been eliminated. The interval between overhauls has been lengthened . . . operating and maintenance costs reduced and dangerous, food-tainting exhaust gases eliminated. No wonder more than 2500 fleet operators are unstinted in their praise of this great service. And . . .

It Costs You Nothing!

The POWER PROVER is NOT for sale. It is a part of the service rendered to users of Cities Service petroleum products to help them get better performance and use less gasolene and oil. Without any obligation whatsoever on your part, we will be glad to demonstrate on your own fleet what POWER PROVER Service can do for you. So, without cost, ask for this demonstration at once and discover this new, proved way to cut fuel, operating and maintenance costs.

CITIES SERVICE OILS
ONCE - ALWAYS

For FREE demonstration mail this coupon today!

Cities Service POWER PROVER, Room 702
60 Wall Street New York City

Gentlemen: Without any obligation on my part, I would like to have a *free* demonstration of the POWER PROVER on my fleet. I am greatly interested in saving money on gasolene, oil and maintenance.

.....

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NRA

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These two DITZCO ENAMELS *Meet every need*

BOTH quality finishes. Ease of handling, covering qualities and durability mean reduction in ton-mile refinishing costs.

Many fleet owners are making such a saving by using Ditzco Enamel. Now we give you Ditzco Enamel Quickset —with the additional quality of setting dust free in thirty minutes.

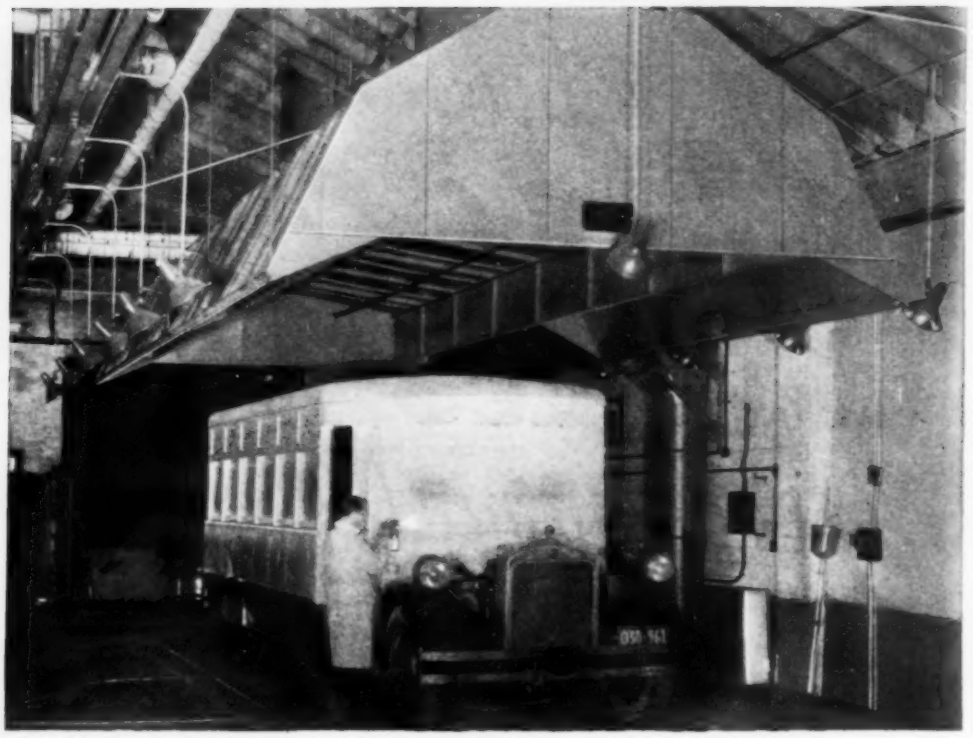
Ditzco Enamels are available through the Ditzler nation-wide distributor service. Ask for more information.

DITZCO ENAMELS

DITZLER COLOR COMPANY, 8000 W. Chicago Blvd., Detroit, Mich.

Say "I saw it in FLEET OWNER"—It Helps!

NOT ONLY IMPROVED APPEARANCE



But also

Lowered Costs Through Spray-Finishing

Fleet operators generally recognize the beneficial effects of attractively finished units. But consider also the substantial economies offered by modern spray-finishing equipment. DeVilbiss Spray-Finishing Equipment lowers painting costs, enabling you to write off new equipment without burden. It promptly releases vehicles for revenue duty, permitting you to secure maximum efficiency from your fleet. It maintains attractive appearance, building lasting goodwill and increased patronage.

It will pay you to secure complete data on DeVilbiss Spray-Finishing Equipment. There is an installation designed to meet your individual requirements, and there is a trained representative near you to recommend the particular equipment you need. Phone for him. Or write us direct.

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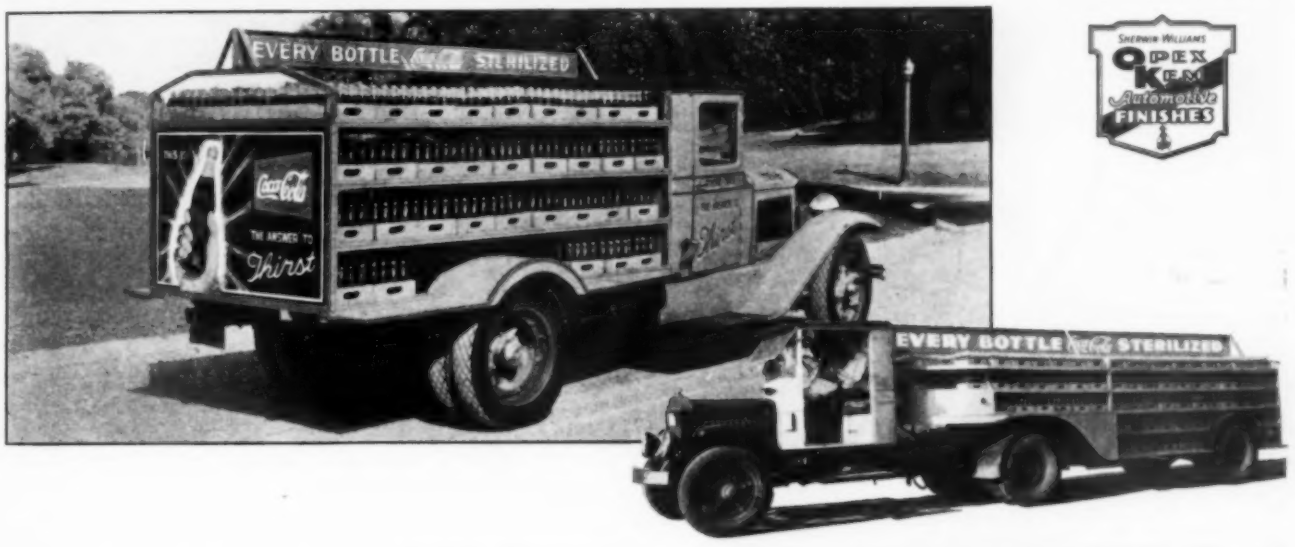
Direct sales and service representatives available everywhere

Try the new DeVilbiss Pro-Tek on your hands. Paint, lacquer, enamel and similar stubborn materials will wash off under running water. Send for free sample of DeVilbiss Pro-Tek.

DeVilbiss

Say "I saw it in FLEET OWNER"—It Helps!

Approved and recommended by COCA-COLA BOTTLING STANDARDIZATION COMMITTEE



Here are a few of the various types of trucks operated by the Coca-Cola Bottling Companies throughout the United States, finished with Sherwin-Williams Kem Transport Enamels. Thus another internationally known and highly respected fleet operator turns to the brighter, longer wearing colors of Kem Transport Enamels, in the interest of lower maintenance cost and higher advertising values of vehicles.

Every fleet owner should have the complete story of S-W Kem Transport Enamels. They are chemically evolved finishes, designed specifically for transportation equipment. Write for it now on your company letterhead. Sent without cost or obligation. The Sherwin-Williams Company, Department 623, Cleveland, Ohio.

MAJOR ADVANTAGES Kem Transport Enamels Offer You

1. *More economical to use:* High solid content enables Kem to cover solid in one coat even when reduced 33-1/3 per cent to spraying consistency. Produces sharp high gloss without rubbing or polishing—saves on labor costs.

2. *Easy working characteristics:* Sprays easily because of excellent build. Levels to a uniform film. Can be brushed for reveals, belts, etc. Faster handling insures minimum labor costs. Good package condition always. Suited for application on wood, metal and composition. Can be applied over old finishes with minimum operations. Double coat sprayed continuously.

3. *More attractive appearance:* Produces porcelain-like finish. Tight film makes it easy to wash and keep clean. Uniform degree of gloss in all colors.

4. *Greater durability:* Kem Transport Enamels give the longest life of any Enamel finish. Colors are fast to light . . . have excellent gloss retention on exposure. High resistance to wear and the action of oils, salt water and gasoline. Even greater durability may be achieved by varnishing with Kem Transport Clear Finishing Varnish.

Trade-mark Registered

SHERWIN-WILLIAMS TRANSPORT kem ENAMELS

Every few seconds..

BENDIX·WESTINGHOUSE CONTROL
pays for itself

Somewhere, every few seconds, the quicker, positive, more powerful action of Bendix-Westinghouse Control prevents an embarrassing if not costly situation. Statistics would prove this statement and elementary economics show the dollars and cents advantage of selecting this more advanced equipment . . . . especially where safety is a duly recognized item of operation. Needless to say, this thought is the very foundation for the obvious "big swing" to genuine Bendix-Westinghouse Air Control and is justification in itself for the slight additional cost of this time-tested equipment. Ask any operator if there have not been numerous instances when, in a split-second, Bendix-Westinghouse Control has been worth many times its original cost. We know of many. Write for information.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY, PITTSBURGH, PA.

Say "I saw it in FLEET OWNER"—It Helps!

The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

VOL. 11 New York, November, 1933 No. 5

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Published Monthly by

The FERGUSON PUBLISHING COMPANY

90 West Street, New York City

E. F. Ferguson, President

A. L. Conley, Gen. Mgr. and Treas. — Henry Clay Fischer, Editor

ADVERTISING DEPARTMENT:

Eastern Mgr.: Hal. H. Clark, 90 West St., New York, Tel. REctor 2-9179
Cleveland-Detroit Mgr.: L. W. Perkins, 3260 Elsmere Rd., Cleveland, Tel. Longacre 2718
Chicago Mgr.: D. B. Trott, 5820 Kenmore Ave., Tel. Long Beach 2331
West Coast Rep.: R. H. Deibler, 244 W. 15th St., Los Angeles, Tel. Richmond 5274

CIRCULATION SUPERVISOR:
J. Hayes Fuller

Subscription: $2.00 Yearly; Single Copies 25c

CCA

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What are you doing

to offset the increased cost of truck operation ?

Gas, oil, labor and material costs have advanced, but the *HOOF Cantilever spring Governor* has greatly decreased gas and oil consumption and general fleet upkeep.

Excessive speed increases repairs tremendously.

With a HOOF Governor there is no sacrifice of pickup—no loss of power.

Accurate records of many fleet operators clearly show that one key in one man's hands definitely reduces fleet maintenance 75%, gas 25% and oil consumption 80%. 394 National fleets are now conserving with HOOF Cantilever Spring Governors.

HOOF PRODUCTS CO.

THE HOOF PRODUCTS CO. own Patent No. 1,726,725 and are exclusive licensees under patents granted and patents pending, covering Key-Control, Cantilever Spring, and Automatic Spark Advance principles used in the Hoof Governor.

166 N. FRANKLIN ST.
CHICAGO

One half turn of key changes speed 2½ miles. Removing key locks Governor.

Shows Cover Off. Nothing to hide in a Hoof Governor.

The HOOF

CANTILEVER SPRING

GOVERNOR

adopted as standard on the World's largest fleet

GLANCE AT THIS CHART

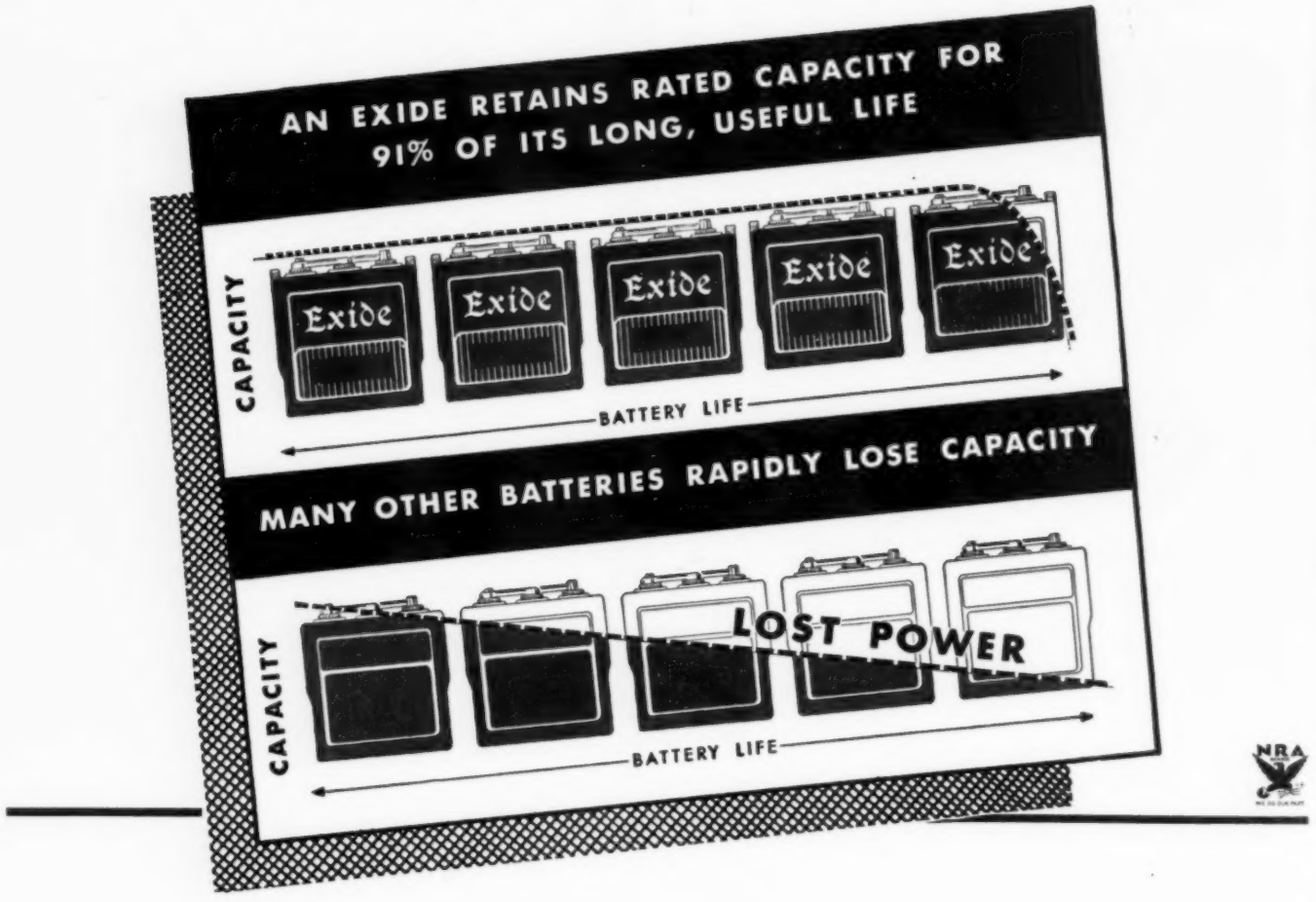


Chart shows why Exide Batteries give the lowest cost per truck mile. Operators who use Exides find maintenance simple and economical.

EXIDES save money and do their work more efficiently. The battery that rapidly loses capacity, regardless of the initial cost, is expensive in the long run. When capacity dwindles, maintenance costs skyrocket. When you invest in Exides you're sure of getting dependable, economical service, long life, and plenty of power for the toughest jobs. And that means you get more for your money.

Exide Engineering Service

To help keep maintenance figures in line with present-day operating policies, we have an established Battery Engineering Service. This Service, conducted by carefully trained and experienced battery engineers, is available to fleet operators. There is no charge made.

Exide
BATTERIES
FOR EVERY TYPE TRUCK

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE
Exide Batteries of Canada, Limited, Toronto

Say "I saw it in FLEET OWNER"—It Helps!

A du Pont Paint Farm where Automotive DULUX is exposed for weeks and months to prove its durability. Here is Pre-Testing at its height.

In white or bright colors, a finish of du Pont Automotive Dulux *retains* its original gloss and color for an unusually long time. That is the reason why this and other Breyer Ice Cream trucks are finished with this Pre-Tested product.

Pre-Testing is a plus value that assures you of the durability and economy of Automotive DULUX Finish before you use it on your trucks

HERE IS assurance of a finish that gives exceptional protection to trucks . . . a finish whose original color and new-looking appearance last unusually long . . . and a finish that knocks down refinishing costs.

Why can we say this so confidently about Automotive DULUX? Because it is a Pre-Tested product. Du Pont chemists tested every characteristic of this finish before it was labeled and sold. They tested it as a finish was never tested before.

First tests were in the laboratory. Then came the supreme test at du Pont Paint Farms like the one shown above, where, applied to wood and metal panels, it was exposed for weeks and months to the full force of the weather—to the attacks of heat and cold. Here Automotive DULUX proved the hardness and toughness of its film, its adherence to the surface, its remarkable flexibility under temperature changes, its resistance to corrosion—its fitness to serve on your trucks day after day.

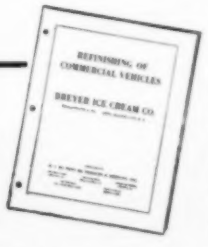
Many other tests took place. Laboratory torture proved its quick-drying property and its resistance to gasoline and oil. Actual application and use on trucks gave final assurance of superiority before it was offered to you. Everything was done and is done today through constant checking to remove every bit of guesswork possible from production. You can't afford to take chances on any products today. Du Pont simply wants to make sure that Automotive DULUX gives full value for every penny you invest in it.

Your own refinishing shop or an Authorized du Pont Refinisher can apply Automotive DULUX easily with spray or brush. If you desire, we will gladly help you work out standard Automotive DULUX specifications for your fleet. The Breyer specifications here are an example of this free service. Address E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Del.

DU PONT REG. U. S. PAT. OFF. —AUTOMOTIVE—

DULUX

Reg. U. S. Pat. Off.



Say "I saw it in FLEET OWNER"—It Helps!

A Total of

87

makes of trucks and buses are equipped with Ross. This overwhelming choice is based on easier steering easier adjustment, longer life.

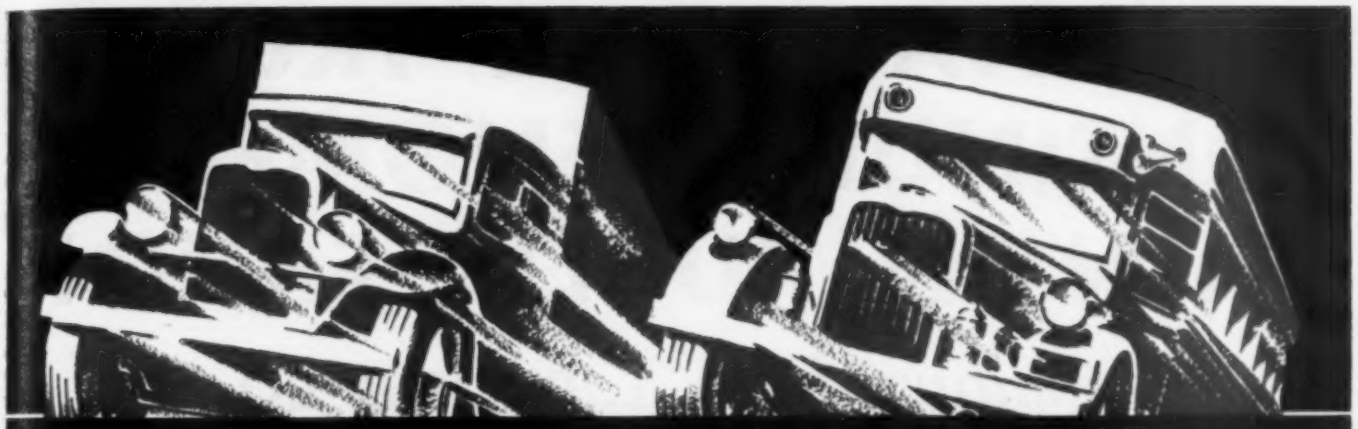
WRITE FOR INFORMATION REGARDING ROSS GEARS FOR REPLACEMENT

★ 206 ENGINEERING STAFFS PREFER ROSS •

ROSS CAM & LEVER STEERING • ROLLER MOUNTED

ROSS GEAR AND TOOL COMPANY • LAFAYETTE INDIANA

Say "I saw it in FLEET OWNER"—It Helps!



AMERICAN BRAKEBLOK

REDUCES BRAKE SERVICE COSTS BECAUSE IT WEARS LONGER AND NEEDS LESS ADJUSTMENT

Regardless of whether it is installed on trucks, buses or passenger cars, you can expect longer life and less necessity for adjustment from American Brakeblok. Both in the cost per stop and in the cost of maintenance in service, American Brakeblok produces definite savings for the fleet using it.

• • •

AMERICAN BRAKEBLOK gives quick, smooth, safe stops, even when the material is worn wafer-thin. It is utterly different from other brake linings—a dense homogeneous solid containing no rubber. It is non-compressible in service and does not swell or burn. The alloy-grid back permits deeper counter-sinking and gives a greater thickness of usable material, thus adding to the service life. Anchorage is far more secure and installations are vastly better.

American Brakeblok replaces any other brake lining and is installed without change in method or in the original brakes.

Write for complete information on any type of installation.

Quick Facts About American Brakeblok

This new type of braking material is:

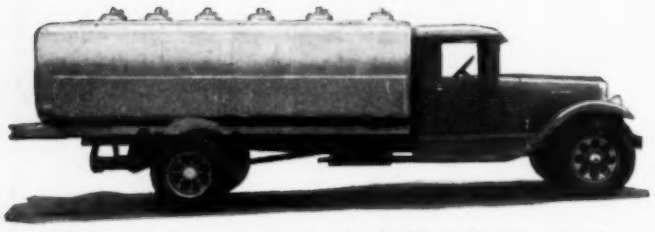
—a dense, homogeneous solid—the same clear through.
—formed under pressure—not woven or laminated.
—scientifically heat-treated.
—ground to absolute uniformity in thickness.
—resistant to highest braking heats—contains no rubber.
—non-compressible under braking pressures—stays in adjustment longer, minimizing possibility of squeals.
—made with an alloy backing that gives greater thickness of usable material—longer life—and better installations.

AMERICAN BRAKEBLOK
Reg. U.S. Pat. Off.

AMERICAN BRAKEBLOK CORPORATION • 4660 MERRITT AVENUE • DETROIT, MICHIGAN, U. S. A.
New York, Cleveland, Chicago, St. Louis, Los Angeles, San Francisco
A Division of **American Brake Shoe and Foundry Company**

INTERNATIONAL TRUCKS CONTINUE PHENOMENAL GAIN IN PUBLIC FAVOR

as shown by R. L. POLK & CO. *latest official registration figures*



Up-to-the-minute transportation for the oil industry—the International 3-ton Model A-6 Truck equipped with an 1,800-gallon aluminum tank body and standard cab.

CAPITOL TANK LINE

3743 East Florence Avenue
Los Angeles—(Bell)—Calif.

International Harvester Company of America,
Los Angeles, California.

Gentlemen:

About May, 1929, we purchased three heavy-duty International Trucks. One of these trucks has constantly been on the haul from Los Angeles to Phoenix, Arizona, and generally operates twenty-four hours per day, with only sufficient time out for loading, unloading, refueling, etc. In fact, the round trip is made in 70 hours.

Today one of these trucks has been in operation for over 300,000 miles, and at a very nominal expense. As an illustration, the truck is today in your shop to have the cylinder block replaced because of an accident. This cylinder block has been on the truck for 147,000 miles without being rebored or reground.

We are simply calling this to your attention to indicate how favorably your trucks are performing, and to assure you that your advertising of low operating cost on International Trucks is justified.

We are operating seven International Trucks, with gasoline tanks, hauling a gross capacity load of 68,000 pounds on truck and trailer, and we can assure you that when additional trucks are purchased they will be Internationals.

Yours very truly,

CAPITOL TANK LINE.
MORRIS ESACONE.

IN 1931, one in every *fifteen* new trucks registered in the United States was an International. In 1932, it was one in every *eleven*. Now, in the first six months of 1933, according to official registration figures, the demand for International Trucks has increased to one in every NINE—this with fifty-three truck manufacturers competing for the market.

What is the reason behind so rapid and so consistent a rise in popularity? International has never made a bid for leadership through price. The reason is deeper and more practical than low first cost. It is in fact two-fold—*International QUALITY* in the trucks, and *International SERVICE* back of them. With these two vital factors International Harvester is in position to reduce hauling costs to lowest possible terms, as tens of thousands of veteran International owners have learned.

Read the letter from the Capitol Tank Line, Los Angeles, at the left—it is a typical statement from an owner telling about International performance and economy.

Note these chassis prices, f.o.b. factory:

½-ton Model D-1	$ 360
1½-ton Model A-2	615
1½-ton Model B-3	695
2-ton Model B-4	1045

Other Models 2 to 7½-ton

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. OF AMERICA (*Incorporated*) Chicago, Illinois

INTERNATIONAL TRUCKS

Say "I saw it in FLEET OWNER"—It Helps!

VOL. 11
NO. 5

The FLEET OWNER

NOV.
1933

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

Breathes there a man with soul so dead,
Who never unto himself hath said,
When on a bolt, he stripped the thread:
"°#.. %# ')x°°# v¼"°#$$"°°##"

THANK YOU, MR. NEWTON!

● You're missing a good thing if you pass up L. V. Newton's series of articles entitled "*Effecting Economies in the Fleet*," the first of which appeared in our October issue, the second in November, and so on until his entire paper (presented before the S. A. E. Chicago Congress) shall have been run. To our way of thinking, Mr. Newton writes as well as we hope to be able to some day. He dispenses nothing but practical, first-hand information, acquired through many years of fleet supervision experience. Dig out your October issue and start the series, if you haven't done so. When you read this month's installment on Lubrication you'll be inclined to agree with us. And, if there's anything more you want to know about the subject, don't ask us. We're genuinely glad to have the privilege of publishing such stuff and feel certain that you'll be equally pleased to receive it.

●

RATES FOR SALES CARS?

● If you are interested in data on the subject of figuring fair allowances to pay salesmen for the expense of their cars, just borrow, beg or steal a copy of *Printers' Ink*, issue of September 7th, 1933. On page 84 there's an article entitled "Flat Allowances for Salesmen's Cars Cause Padding." In it the author explains what we have been trying to convey for several years: If a flat allowance is the rule, some salesmen will be making money and some will be losing money on their expenses, as operating variables prove that no two expenses will be alike, even with the same cars, on the same routes. It is best not to try to set up any arbitrary figure; pay them the actual cost of car operation. Setting up a standardized allowance figure will only penalize your firm in the case of a low-cost operation, and will take so much extra out of the salesman's pocket, whose car expenses may be higher, even though it is due to no fault of his. Read the article, even if you have to go to the library to see it. That's our advice to you.

●

FIXING 'EM ON THE ROAD

● We wonder how many fleets are operating on the same basis as the Hill Bread Company, whose experience on Road Breakdowns is related on page 22 of this issue. According to their Garage Superintendent, Jean Babin, they've a system all of their own. You'll have to read his article to learn what it's all about. Apparently it's giving satisfaction, deliveries are being made and their costs are in line. What more could one expect? Personally, we'd rather have a nice cozy garage in which to do our major repairs and confine our road-service to such minor jobs as changing tires, replacing distributor points, changing spark plugs or replenishing water in radiators. Maybe it's all right to use the public highway as a work-shop in some localities. But what about the cops? If they catch you they'll "find" you. (We *must* have our little joke).

●

A SPLENDID EXAMPLE

● Getting serious again, we wish there were a lot more Mr. Babins. Jean was nice enough to sit down and write us a long letter, in true cooperative spirit, because he realizes that FLEET OWNER is a publication written for the most part *by* fleet maintenance men and not *at* them. He thought that you would be interested in his experiences and naturally is looking forward to read some of yours. Having "done his part" he says it's now *your* move. The NRA code implies that Editors are "executives" which is another way of saying that they can work us as long and as hard as they wish to. But our task would be much simpler if there were more Babins, to say nothing of the Newtons, Brettells, Bixbys, Archers, Middleworths, LaSchums, Woods, O'Keefes, Hofgaards, Duvals and other gentlemen who have contributed their experiences to this publication from time to time. If all of us were assembled in one room, we're sure that a rising vote of thanks would be unanimous.

●

SUGGEST A BETTER ONE

● We've been chided, on several occasions, because of the unusual title which our Editorial Page bears. If you can suggest a better one, we'll be glad to incorporate it. But don't offer us any of the following, as they've been considered and found wanting: "Throwing the Bull", "Tightening the Nut", "Shooting the Baloney", etc., etc. As first prize in our title contest, we'll offer you the choice of a set of Toledo valves for a Willys-Knight, a set of Packard spark-plug wires for a Model A Ford, or a brand-new Simmons water pump for a Franklin.

●

PAGE MR. WEBSTER

● New definition of a fleet maintenance superintendent: "Fleet Overhead Reducer." Thanks to M. B. G., of Baltimore, Md.

« »

H. Clay Fischer
Editor

« »

By Willard D. Bixby,
Manager of Motor Equipment, United Parcel Service, New York City

Cost-Keeping for the Fleet Shop

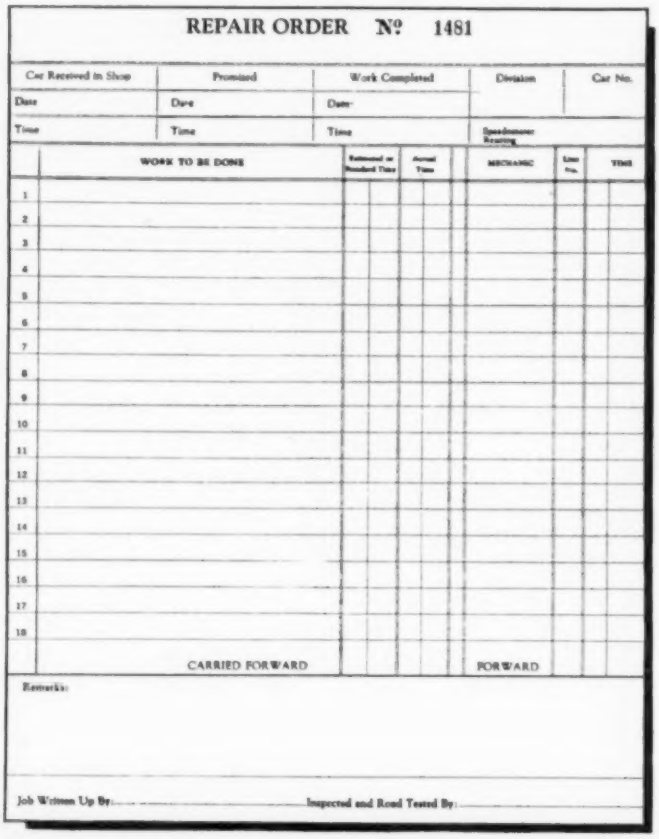
Some of the "Paper Work" Used In Connection With the United Parcel Service Company's Fleet Maintenance

(EDITOR'S NOTE: *During the year now coming to a close, we were indeed fortunate to be favored with several articles describing and illustrating the operation and maintenance of the United Parcel Service fleet. We haven't had a "Maintenance on Paper" story for a long time, so this month Mr. Bixby is finishing up his contribution of articles with one on Cost Keeping. We know you'll find it of interest.—H. C. F.*)

●

WE will now go into the matter of cost keeping in the shop. Under the system in use by United Parcel Service of New York, all costs are kept in the shop office. All purchasing is done here too. The maintenance department is a separate operation. We maintain a fleet of cars and rent them to our various delivery stations at a certain fixed charge to cover the overhead, plus a certain rate per mile to cover operating costs. This rate changes each month depending on the number of cars used and the number of miles run.

For our own guidance in the shop and also to enable the delivery stations to figure their costs, we keep our shop costs daily. We are thus able to keep a close watch on these costs and can take immediate action if they appear to be getting out of line. We do not have to wait for the auditor's monthly report to know what we are doing. A shop is working in the dark if no daily cost record is maintained.



REPAIR ORDER Nº 1481

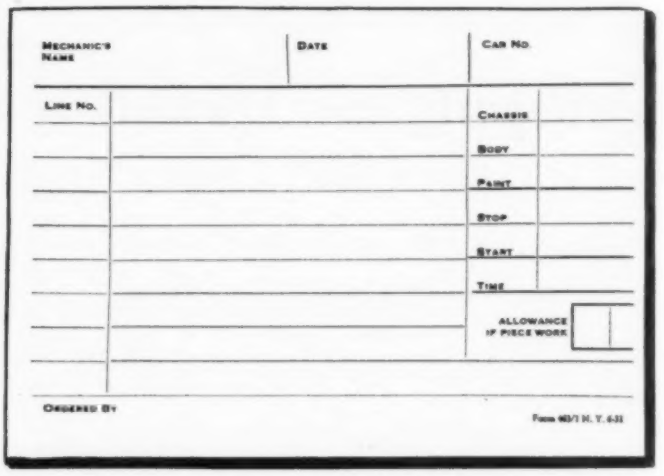
Car Received in Shop	Promised	Work Completed	Division	Car No.
Date	Date	Date		
Time	Time	Time	Speedometer Reading	

	WORK TO BE DONE	Estimated or Standard Time	Actual Time	MECHANIC	Line No.	TIME
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18	CARRIED FORWARD			FORWARD		

Remarks:

Job Written Up By: Inspected and Road Tested By:

The first operation when a truck comes into the shop is to write up a repair order. Each job to be done is written on a separate line and all work done on that operation is finally charged to that line number.



MECHANIC'S NAME | DATE | CAR NO.

LINE NO. | CHASSIS | BODY | PAINT | STOP | START | TIME | ALLOWANCE IF PIECE WORK

ORDERED BY

Form 463/1 N. Y. 6-31

Each mechanic works from an individual ticket like this one. Different colored ones are used for different classes of work.

We are very careful to get all work that is done on a car charged to that particular unit. We do not approve of charging a lot of time into general shop expense, which should be charged to a car, just because some particular job begins to run far over the estimated cost.

Many times after all major units in a car are overhauled, there remain several hours of minor work—road testing, etc., which should be charged to the job in question. These (many time consuming details) run up the cost on the job and are not looked on with favor by the men turning out the work, but they go into the costs just the same.

I will briefly outline here the whole system of keeping costs on a job as it goes through the United Parcel Service shop:

Each man works from an individual ticket on each job. At night each man's tickets are assembled and the time shown on them as charged to separate jobs must total the same as the total number of hours on the payroll for that man on that day.

The first operation performed when a car comes into the shop is to write the job up on a large card called a "Repair Order". This card is ruled across and each line is numbered. There is a space at the top to mark in the date car was received in shop, date promised, date completed, station car came from, the car number and the odometer reading. Each operation to be done is written up on a separate numbered line and all work

BIG BRUTE "X-RAYED"

revealing 10 *ignition safeguards for buses and trucks*

STUDY for a moment this "X-Ray" picture of the Big Brute Coil. Here is design that respects the importance of the coil on the whole ignition system of a truck or bus. Here is energy, power, dependability to a degree never before obtainable in any coil.

Power? If cylinders could talk they would tell you what a hefty, man size super-spark this coil delivers; how it makes cold weather starting easier . . . pick-up, faster . . . running, smoother and livelier.

Energy? The American-Bosch Big Brute Coil has energy to spare . . . reserve energy that maintains top-efficiency ignition even at highest operating speeds. In today's high speed 6 and 8 cylinder engines such reserve energy becomes almost indispensable if failure is to be avoided.

Reliability? Lean mixture or rich mixture . . . worn or perfect electrodes . . . it makes no difference to the Big Brute. It continues to fire the same high-powered, super-spark under conditions where ordinary coils not specially designed for truck or bus use could not; nor could they be expected to.

Examine again the features of the Big Brute. Consider how they can help you banish costly ignition troubles. We will be glad to send you booklet and additional information . . . mail the coupon below.

Screw-type, insulated, lock connector for high tension terminal.
Extra long flash-over distances.
Heavy moulded insulator.
Brass low tension terminal nuts — for screw-driver or wrench—lock-washer.
Soft rubber shroud protects high tension terminal.
Heavy steel mounting plate —cadmium plated against rust.
Heavy brass sealing ring keeps out dust and moisture.
AMERICAN BOSCH COIL
Can also be mounted direct by removing this plate.
This coil does NOT require the use of special condenser or contact points.
Rugged cast-iron housing increases efficiency. Insures low temperature. Wt., 5 lbs.

UNITED AMERICAN BOSCH CORPORATION

SPRINGFIELD, MASS. NEW YORK CHICAGO DETROIT

CANADIAN WAREHOUSE: TORONTO, CANADA

UNITED AMERICAN BOSCH CORPORATION, SPRINGFIELD, MASS. SEND BOOKLET ON SUBJECTS CHECKED:

PRODUCTS manufactured by the UNITED AMERICAN BOSCH CORP., bear the trademark shown above.

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- ☐ American-Bosch Condensers
- ☐ American-Bosch Battery Charger
- ☐ American-Bosch Magnetos
- ☐ American-Bosch Car-Radio

PRODUCTS OF ROBERT BOSCH A. G.

- Bosch Ditch & Fog Light ☐
- Bosch Windshield Wipers ☐
- Bosch Pyro-Action Spark Plugs ☐
- Bosch Rapid Transit Magnetos ☐
- Bosch Volt-O-matic Generators ☐ (25)

PRODUCTS manufactured by ROBERT BOSCH A. G., bear trademarks shown above. Sold by United American Bosch Corporation.

WRITE NAME AND ADDRESS IN SPACE BELOW

Say "I saw it in FLEET OWNER"—It Helps!

FLEET MAINTENANCE "ON PAPER" (*Continued*)

SPECIFICATIONS — CAR NO.

Chassis No.	Make	Model	Motor Number	License Number	YEAR
					1931
Type and Make of Wheels	Size of Tires: Solid	Size of Tires: Pneumatic	Chassis Weight		1932
					1933
Date Purchased	Purchased From		Cost		1934
					1935

Body No.	Built by	Type	Inside Dimensions: Height	Inside Dimensions: Width	Inside Dimensions: Length	Overall Dimensions: Height	Overall Dimensions: Width	Overall Dimensions: Length

Cu. Ft. Cap.	Weight	Cost	Total Weight of Vehicle	Total Cost
			Purchased New ☐ Second Hand ☐	

Inspection	O.H. Motor	O.H. Clutch	Install Rings	Tighten Bearings	Grind Valves	O.H. Trans.	O.H. Rear Axle	Reline Brakes	O.H. Front Axle	O.H. Steering Gr.	Replace Plugs	Overh. Magneto	O.H. Carburetor	Repair Radiator	Replace Springs	Repaint	Reverench	Repair Body	Recover Top			Wreck

For the guidance of the shop foreman, 5 x 7-inch cards (both sides of which are shown above) are on file in the shop office, giving a description of each truck—engine number, license number, body dimensions, etc. On the back of these cards are listed the larger operations, which it is desirable to check back from time to time as the trucks come into the shop. In the spaces opposite each operation the dates on which such work is done are marked in.

Car No.	Driver	Date
Called By		Received By
Location of Truck		Time Rec'd
Nearest Phone		Sent Mechanics
Nature of Trouble as Reported		
		With Truck No.
		Time Left
		" Arrived at Job
Instructions Given		" Job Completed
		O. K. By Driver
		Time rec'd to M. D.
Weather and Road Conditions		O. K. by Foreman

F 403 N. Y. 10 blks 1-32

This form provides a complete record of emergency road service work. It leaves nothing to the imagination.

done on that particular operation is finally charged to that line number.

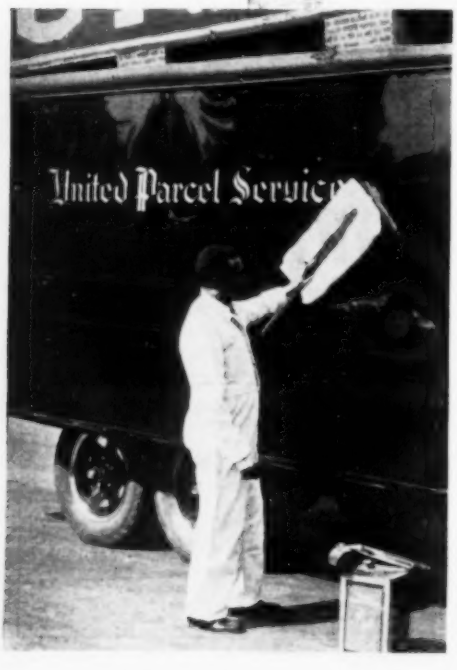
After the job is written up and the card signed by the foreman an individual 3 x 5 inch slip is written up for each line. There are different colored slips used for different classes of work, as—pink for painters, green for auto mechanics, grey for trimmers, etc. These slips bear the number of the lines they are copied from, as: Line No. 1—Grind valves; Line No. 2—Change right rear spring; Line No. 3—Repair top, etc.

These slips are the ones the mechanics work from. They punch "in" and "out" on them and they are posted on the repair order, giving mechanic's name, the line number and the time by hours and tenth hours.

After every job on the Repair Order has been completed and the car has left the shop, all the time which has been put in on the small slips for each operation is added together and posted on the proper line on the repair order. We might have a dozen slips for some lines or operations and only one or two for others.

In order to get the time on any particular job, as the work progresses, it is only necessary to glance at the repair order. We might find that the valve grinding

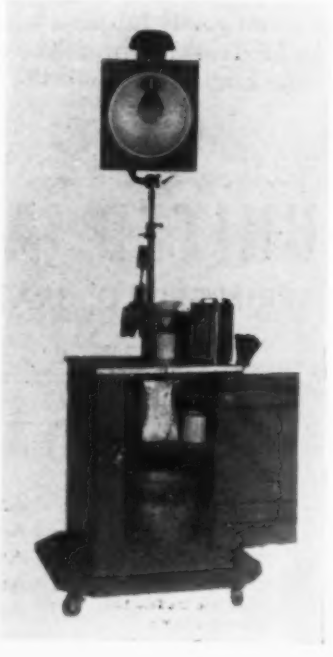
(*Please turn to page* 39)



TWO SERVICE KINKS

KEEPING polished panels and bodies shiny and bright is a simple task with this inexpensive polishing bat, home-made out of large strips of cotton batting. It is lightly sprayed with a liquid gloss, folded triple and attached to wooden handles. Trucks are polished every morning. The cost? Less than five cents per day for the whole fleet.

HERE is a combination reflector lamp and painter's cabinet. The 300-watt lamp is fully adjustable. The cupboard provides a place for hanging brushes, a cup for straining varnish, a water-pail, chamois, sponge, etc. Each painter has his own cabinet, lock and key. The outfit is mounted on casters and the lamp can be extended to ten feet high, if necessary. It saves many steps and considerable electric current.



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★ GUARANTEE

Toledo "Type S" Super-Forged Valves are guaranteed. Your jobber will give you, without charge of any kind, a new valve in exchange for any Toledo "Type S" Super-Forged Valve which proves defective in service.

● Tough, heat-resisting, Toledo Super-Forged Valves are guaranteed. They deliver complete satisfaction in the hardest service . . . Toledo Valve Guides are of the same high quality. For full powered performance and best results, equip your fleet with Guaranteed Toledo Valves and new Toledo Guides.

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TOLEDO

Say "I saw it in FLEET OWNER"—It Helps!

(Presented Before the Recent S.A.E. Automotive Engineering Congress)

By L. V. Newton,
Byllesby Engineering & Management Corp., Chicago, Ill.

Effecting Economies *in the* Fleet

Article II: Lubrication • The Second of a Series of Interesting Analyses on Pertinent Fleet Maintenance Topics • More to Come

CORRECT and effective lubrication of motor vehicles is an economic necessity. It is a matter worthy of careful study by all fleet operators and one that is sure to return worthwhile dividends in the form of longer vehicle life, lower repair costs and lower total cost of operation.

In deciding upon the make and grade of oil and lubricants to use, full weight should be given to the complex characteristics of the modern motor vehicle engine and chassis. High and low speeds of rotating parts, tooth and bearing pressures, temperatures, ability to maintain lubrication seals, variable load, the intrusion of abrasives such as road dust or grit,—all are encountered in the simplest car or truck.

For simplicity and economy of operation, the number of lubricants decided upon should be as few as will insure good lubrication, but the number should not be unduly restricted to the extent that lubrication of certain parts is not adequately and correctly accomplished.

In the selection of motor oils, the recommendation of the manufacturer of the vehicle should be closely followed as regards viscosity or SAE number. As has previously been stated, the lowest viscosity oil which will effectively lubricate the engine should be used. Experience has shown that for most automotive purposes, suitably refined oils of paraffin, naphtha or mixed base may be used with equal satisfaction. The most important factors in the selection of a good oil are the reliability, skill and ability of the refiners, and their adherence to uniformity rather than the type of crude used.

A much discussed question is how often should oil be changed. I do not believe that there is a simple answer to this question. If a good quality of oil is used; if operating temperatures of the engine are unfavorable to crankcase dilution; if climatic conditions are unfavorable to formation of water in the crankcase; if the engine is equipped with an oil filter,—then the periods between oil changes may be safely prolonged, possibly every 2,500 to 3,000 miles. Level of the oil in the crankcase must of course be checked and fresh oil added when necessary.

Some operators believe that under these conditions it is not necessary to change oil at all except from summer to winter grade, and vice versa; however, as yet I cannot subscribe to this theory. I believe, however, that with the improvement and general use of oil filters and with water temperature controlled with a thermostat and with the further safeguard of adequate air cleaners on the carbureter air intake and on the breather, that the day will come when we will not change oil except to meet seasonal demands.

There appears to me to be a distinct need for an instrument that will readily indicate the viscosity and the contamination of oil in the engine crankcase, the readings of such an instrument being used as a means for determining the necessity for oil changes. While there are some instruments offered, as yet I have seen none that will answer all requirements.

If the fleet operator is reclaiming his oil, the period between oil changes can be reduced as the waste of throwing away good oil is eliminated. We have been reclaiming oil for the past five years, and our experience has been so universally satisfactory that we have come to consider properly reclaimed oil equal to new oil. The cost of motor oil per annum is considerably reduced through the use of an oil reclaimer. The percentage of recovery is from 50% to 75% of the oil dispensed, and the cost of reclamation including all items of expense is from 12c to 16c per gallon.

In one of our companies in the Southwest, operating some 100 passenger cars and trucks, the cost of reclamation last year was 12.2c per gallon. They recovered 43% of the oil they dispensed and effected a saving in their oil bill of approximately $400. A typical analysis of oil before and after reclaiming is given in Table I.

TABLE 1

TYPICAL ANALYSIS OF MOTOR OIL BEFORE AND AFTER RECLAIMING

Specification	Before Reclaiming	After Reclaiming
Gravity	25.5° A.P.I.	24.8° A.P.I.
Flash Point	210° F.	390° F.
Fire Point	420° F.	465° F.
Neutralization No.	0.18 (Acid)	0.04 (Alkali)
Carbon Residue	1.0%	1.0%
Ash	0.088%	0.039%
Viscosity at 100° F.	495 Sec.	660 Sec.
Viscosity at 130° F.	223 Sec.	277 Sec.
Viscosity at 150° F.	148 Sec.	178 Sec.
Viscosity at 210° F.	63 Sec.	70 Sec.

The present day motor vehicle is a complex structure and requires more than one kind of lubricant. A small number of manufacturers of passenger cars and trucks employ a central or magazine type of oiling system, using motor oil as a lubricant for chassis parts such as spring shackles, king pins, steering connections,

"Perfect!"...say Factory Production Experts, Service Mechanics and Fleet Service Managers

Why experiment when buying a Grinder for servicing both hard and soft valve seats? Why not follow the lead of the factories who spent thousands of dollars in experimenting before they adopted ECCENTRIC Valve Seat Grinding for their production . . . Why not take the advice of mechanics who have tried them all and bought the HALL because it was the ONLY method producing a perfect seat in ANY metal from cast iron to hardest Stellite?

If you can afford to experiment, try them all; if you can't, play safe and buy the HALL. Ask your Jobber or write the factory today for descriptive folder.

HALL MANUFACTURING CO.

1620 Woodland Avenue Toledo, Ohio, U. S. A.

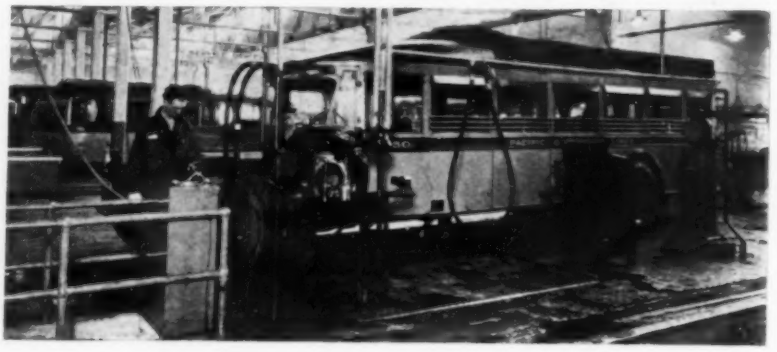
In Canada: Walkerville, Ontario.

Below: HALL Model E-S Eccentric Grinder with Diamond Dresser Stand. Identical in principle with HALL Grinder adopted by leading factories for production.

ECCENTRIC HALL Valve Seat Grinder

Say "I saw it in FLEET OWNER"—It Helps!

L. V. NEWTON ON "LUBRICATION" (*Continued*)



IN this particular operation, the coaches are run over a greasing pit, as shown, where they are refueled, greased and the oil changed or replenished, whichever is necessary. As many as ten different lubricants are sometimes required and Mr. Newton is an ardent advocate of "portable" lubricating boards which carry filled guns of the different types. He also likes "free-wheel" lifts.

etc. It is hoped that, as time goes on, more manufacturers will adopt this or a better system to automatically lubricate chassis parts. Even when this is done, specialized lubricants for such parts as steering gears, wheel bearings, water pump, universal joints, transmissions, hypoid gears, and conventional rear axles will be necessary, and some of these must be furnished in summer and winter grades.

A few years ago, after a study of our parts replacement, we determined that much of the necessity for replacement was due to faulty lubrication and that specialized lubricants were necessary. The lubricants which we decided to employ were motor oil, transmission lubricant, high pressure chassis lubricant or 600W, water pump grease, wheel bearing grease, steering gear lubricant, universal joint grease, hypoid gear lubricant and, in addition to these, shock absorber fluid and penetrating oil.

Since we have utilized specialized lubricants, we have materially reduced the cost of repairs. Some of the items that stood out in particular are wheel bearings. Before beginning the use of a good wheel bearing lubricant, chassis lubricant or cup grease was used and we had a considerable number of bearing failures. Today these have been practically eliminated. Before beginning the use of a good universal joint grease, we had considerable universal joint wear, which has been reduced to a minimum.

Water pump shaft failures have been reduced, since the introduction of water pump grease. Not only have replacements of shafts been lessened but cooling systems are much freer from oil and scum, and hence the expense of cleaning radiators and cooling systems has been very materially reduced.

Steering gear wear was quite high before we started using a real steering lubricant. For chassis lubrication we have attained excellent results with 600W rather than high pressure grease. Whether one is a better than the other is a debatable question.

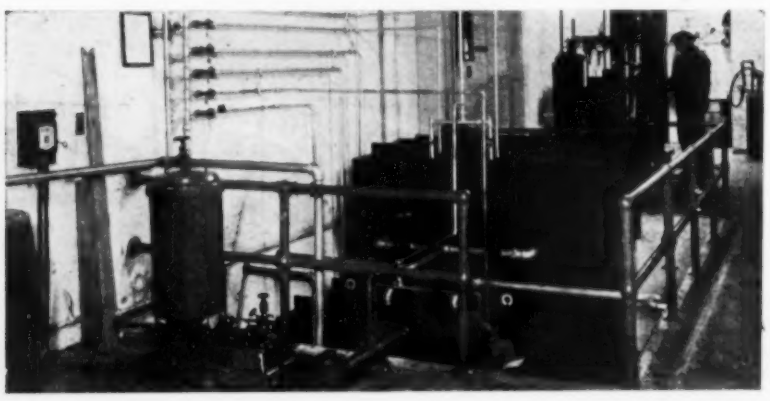
Just what the elapsed time between periodic greasings should be is difficult to answer as there are so many variables to consider. Some operators grease on a time basis, weekly or semi-monthly; others on a mileage basis, varying from 500 to 2500 miles. We attempt to follow the manufacturer's recommendations and have found that frequent lubrication is always desirable and that it is not economy to try to save money by stretching out the periods between greasings too far. Grease is cheaper than repair parts. We have also found that it is true economy to use only the best lubricants, as cheaper ones have always been expensive in the long run.

It is almost universally agreed that vehicles should be washed and chasses freed of accumulated mud and grease before lubrication. This facilitates the work of the greaser and precludes the possibility of abrasive grit being forced into the bearings. At the same time that vehicles are lubricated, shock absorber fluid is checked and any lost by leakage replenished. Penetrating oil or crankcase oil is used for spraying springs and oiling brake linkage.

Modern, well-designed lubrication equipment is essential to properly dispense these various lubricants, and careful thought should be exercised in its selection. Electric and air operated guns produce equally good results for chassis lubrication. The size of the gun for this work should be governed by the number of vehicles to be serviced, the 25 lb. capacity gun being adequate in most cases.

Scissors or lever type guns or compressors of from 1 to 1½ lb. capacity are recommended for the lubrication of steering gears, wheel bearings and universal joints. A separate gun, of course, should be provided for each specialized lubricant. In order to successfully handle the heavy grease for water pumps, a screw type compressor with very heavy threads developing a high

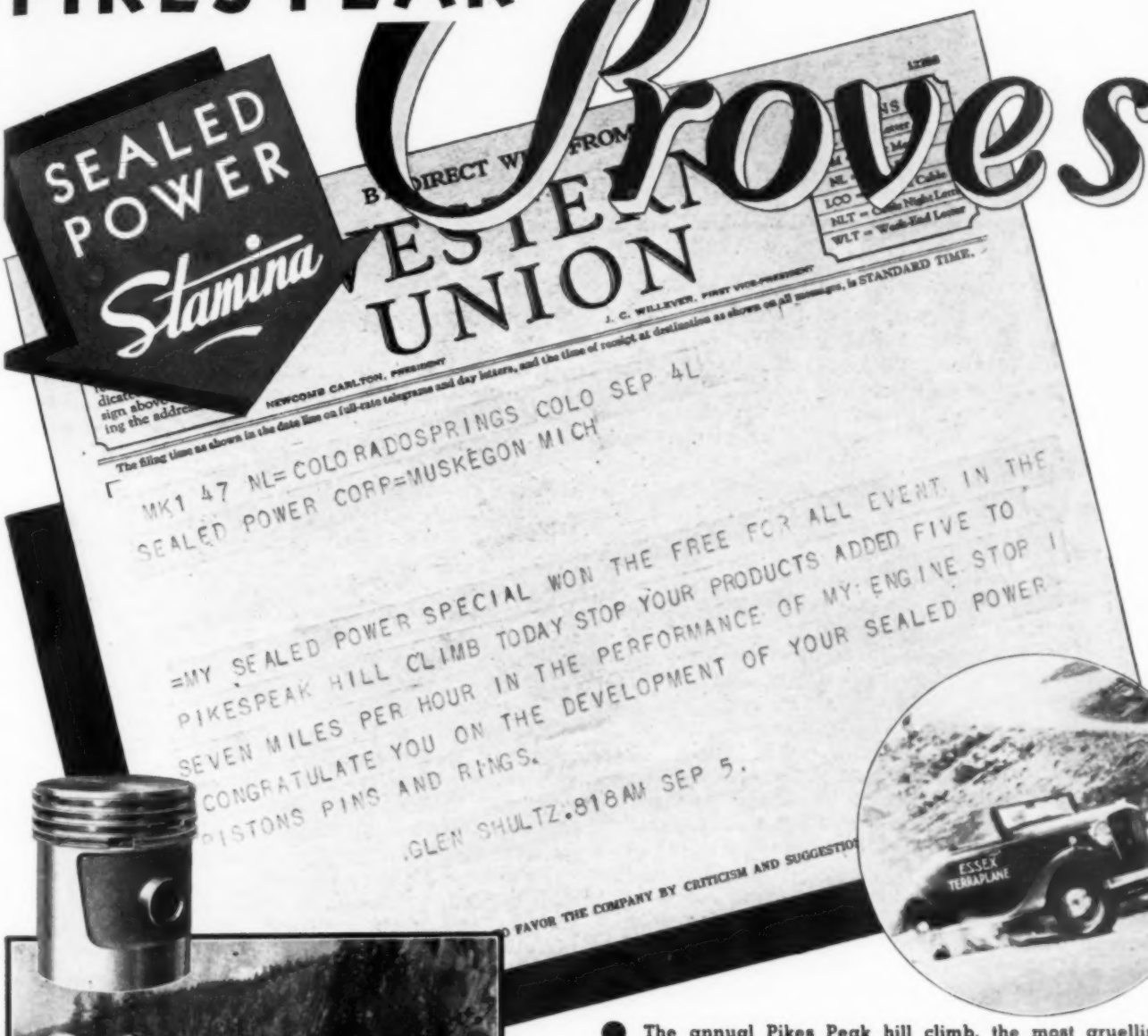
(*Please turn to page* 40)



HERE'S a modern lubricating oil and grease storage room for a big fleet. In the background can be seen the apparatus for the reclaiming of used motor oil. Mr. Newton's operations have been reclaiming oil for the past five years and they have come to consider properly reclaimed oil as equal to new oil. If you haven't as yet investigated the possibilities you're missing a good thing.—H. C. F.

PIKES PEAK *Proves*

SEALED POWER *Stamina*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SEALED POWER CORP=MUSKEGON MICH
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PIKESPEAK HILL CLIMB TODAY STOP YOUR PRODUCTS ADDED FIVE TO
SEVEN MILES PER HOUR IN THE PERFORMANCE OF MY ENGINE STOP I
CONGRATULATE YOU ON THE DEVELOPMENT OF YOUR SEALED POWER
PISTONS PINS AND RINGS.
GLEN SHULTZ.818AM SEP 5.

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"SEALED POWER"

SEALED POWER PRODUCTS

RESTORES NEW ENGINE PERFORMANCE

Say "I saw it in FLEET OWNER"—It Helps!

Servicing a 50-Vehicle Bakery Fleet

By Jean Babin,
Garage Supt., Hill Bread Company, Newark, N. J.

How Our System of Making All Truck Repairs "On the Road" at the Scene of the Breakdown, Has Proven Itself Over a Period of Ten Years

WE have been readers of FLEET OWNER for several years and have thoroughly enjoyed this publication, both from the standpoint of practical maintenance value and the interesting reading material which it presents from month to month. Since many fleet operators have presented their experiences through the medium of this publication, we feel that we should "do our part" and relate some of our fleet maintenance experiences, in turn.

The subject of "Road Breakdowns" is one that we feel will be of universal interest. Of course, there are many who will not entirely agree with our method of handling them, but we are passing the information on for whatever it may be worth. We might say that this system, which we are about to describe, has proven itself in ten years of actual experience and our fleet of 40 trucks and 10 passenger cars is kept on the go continually, with practically no delays on the parts of the drivers.

Keeping our trucks on the road is not such a difficult task. We have two mechanics to service our entire fleet. The trucks, of course, are of the lighter variety —being bakery vehicles—such as illustrated in the picture on this page. We have several of these old model trucks still in service and they are running every day, in addition to the more modern vehicles that comprise the bulk of our fleet.

Because of the fact that we are in the bakery business, the vehicles are on the road many hours each day. Of the 40 trucks, only two of them are "extras"—there is always one in the paint shop and the other one is used as a spare—always ready to go on a road call anywhere in the State of New Jersey.

Should any trouble develop on the road, the driver has instructions to immediately telephone the shop. We try to ascertain from him, over the phone, the exact nature of the breakdown, getting as complete information as he is able to give. Needless to state, we familiarize our drivers with sufficient mechanical knowledge of our vehicles, so that their reports as to road troubles will be more or less accurate.

Whether the breakdown consists of a minor or major repair, we aim always to fix it "on the road." Such jobs as a broken axle-shaft, smashed front-end, stripped rear-end, clutch failure, broken wheel bearing, cracked spring, etc., are typical of the repairs that we can *and do* make on the road.

In carrying out this procedure, it is necessary, of course, to have in our parts stock complete sets of built up units, ready to be installed in the broken-down truck. When a road-call comes in, one of our mechanics loads up the spare truck with the required units, his kit of tools and other equipment needed to effect the repair, and shoots out to the scene of the breakdown.

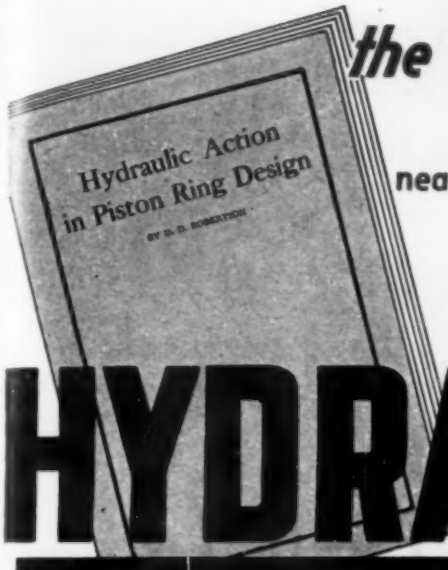
The first thing he does is transfer the load to the spare truck, with the help of the driver, of course, and the newly loaded truck proceeds on its way, with but a minimum of delay. Then the mechanic, who stays with the broken-down truck, proceeds to make the neccssary repair and brings it back to the garage *under its own power*, ready for the next night's run.

To make this plan a success, it is necessary, as before stated, to carry a complete set of new or rebuilt units, such as front-ends, rear-ends, transmissions, wheels, radiators, carburetors, starters, generators, etc., etc. So far, we have been able to effect any kind of a repair on the road, except such things as a broken crankshaft. In this event, the job is not over a day's work at that, because we even carry extra engines in the shop, all ready to drop into the chassis.

By working this way we believe we have made it easier for ourselves, as we actually do work less hours (N. R. A. take note) and get our work done faster. Another advantage is that it eliminates the need for towing and the use of an extra man to help bring back the disabled truck to the shop. This can be better

(Please turn to page 40)

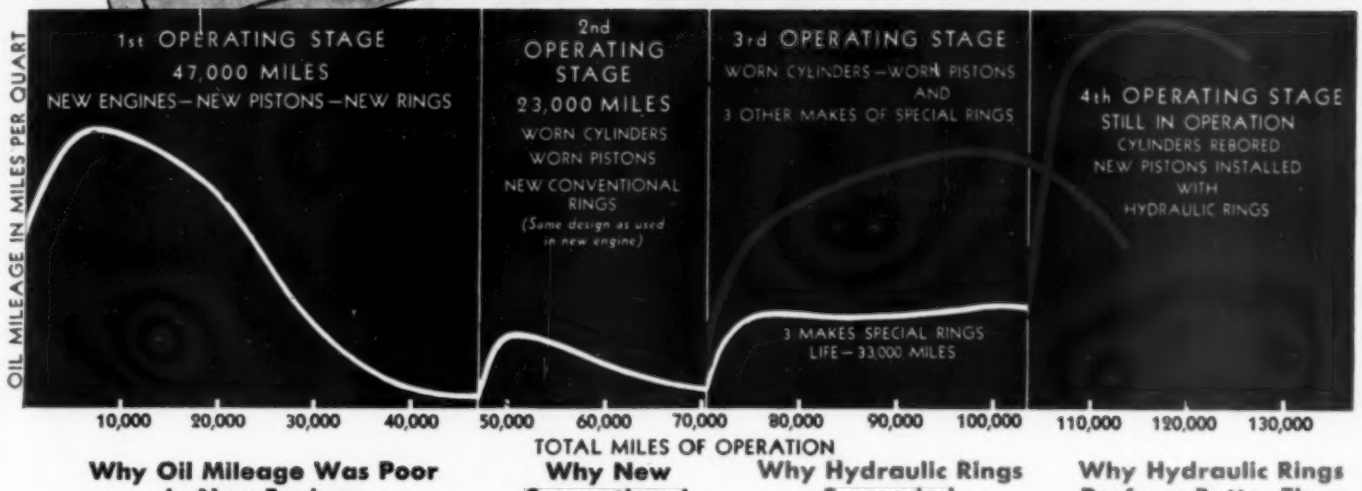
YOU'VE certainly upset our apple-cart, Mr. Babin. Right along we've been preaching Preventive Maintenance and you come along and prove that you can operate successfully by waiting for them to break down and then fixing them on the road. Of course, many of our followers will not agree with you and we want to hear from them. If all of your old trucks look like this one, you (if not your system) certainly deserve credit.—H. C. F.



the TRUTH IS OUT!

nearly 2 million miles* PROVE THE SUPERIORITY OF

HYDRAULIC ACTION



Why Oil Mileage Was Poor in New Engines

1. Design of Engine.
2. Oil Rings Clogged With Carbon.
3. Drop in Efficiency of Rings With Wear of Pistons and Cylinders.
4. Increase of Oil Supply to Cylinders With Bearing Wear.

Why New Conventional Rings Failed

1. Inability to Follow Worn Cylinders.
2. Inability to Fit Worn Ring Grooves.
3. Inadequate for Increased Oil Supply.
4. Oil Rings Quickly Clogged With Carbon.

Why Hydraulic Rings Succeeded

1. Sealed Worn Cylinders.
2. Sealed Worn Ring Grooves.
3. Ability to Handle Excess Oil.
4. Did Not Clog With Carbon.
5. Minimum Wear From Perfect Lubrication.

Why Other Special Rings Failed

1. Attempt to Seal Cylinders With Mechanical Pressure Only.
2. Inability to Seal Worn Ring Grooves.
3. Excessive Wear From High Wall Pressure.

Why Hydraulic Rings Perform Better Than New Engines

1. Ability to Handle Excess Oil.
2. Reserve Capacity Offsets Design Errors.
3. No Appreciable Drop in Efficiency With Wear.
4. Resistance to Carbon Formation.

Pedrick

PISTON RINGS

2 Million Miles of Actual Road Experience. These are not laboratory results. They are the experience of a large public utility concern which made the installations in its own maintenance shops and operated the vehicles in their regular service. Actual field experience like this means infinitely more than any amount of laboratory testing.

The complete record of this road experience is detailed in this reprint of a paper delivered by D. D. Robertson, PEDRICK engineer, at the International Automotive Engineering Congress of the Society of Automotive Engineers at Chicago, Sept. 1, 1933. Send for your free copy.

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Please send me copy of your Booklet,
"Hydraulic Action in Piston Ring Design."

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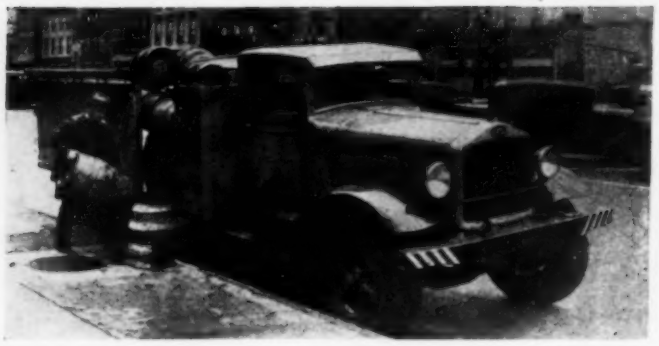


A typical job for wholesale and retail delivery of keg and case beer is shown at the left. Note the low loading height. At the right an ideal job for case beer is pictured. The trucks, as you may have guessed, are White and International.

Bottle, Case or Keg?

Now That Brewers Are Settling Down to Normal Production, Transportation Problems Are Beginning to Get Attention—Here's an Interesting Analysis:

SINCE the legalization of beer, plant and production problems have been the chief concern of most breweries. Fortunately, for the brewers, the conditions that immediately followed the return of beer, with the customers taking delivery of practically the entire output of most breweries at the plant, the problems of transportation and delivery could be postponed until plant and production problems had become more settled.

That period is now passed in practically every community, and the time has arrived when brewers must give serious consideration to their delivery problems. The question of delivery and transportation costs ranks in importance to the question of production costs. Ultimate earnings and profits are as dependent on the one as on the other.

In considering the problems of transportation and delivery, the brewer cannot look on his present day problems in the light of his pre-prohibition delivery. Thirteen years ago, practically the entire output went to saloons, hotels, and a few restaurants. Today, the number of outlets have increased many times. With the increased outlets, the average number of barrels or cases delivered per stop is much less. Thirteen years ago, the percentage of barrel beer to case beer was much greater than it has been so far today.

Truck equipment is entirely different,—the trucks, as a rule, used in the delivery of beer thirteen years ago, were heavy duty trucks, with solid tires, seldom capable of speeds in excess of 15 or 18 miles per hour. The truck industry has developed tremendously during this period,—the 4-cylinder truck has given way to the 6-cylinder truck,—solid tires to balloon tires,—2-wheel brakes to 4-wheel hydraulic or air brakes. Truck motors are today capable of much higher road speeds and much greater gross loads. The distance that beer may be delivered by motor trucks in competition with railroad rates has been doubled and tripled. The entire beer transportation picture has changed.

Today there are three classes of beer delivery, wholesale, retail and intercity.

Wholesale delivery is the delivery from the brewery or distributor's warehouse to the hotel, store, restaurant, or any other place where beer is sold to the consumer. The greater proportion of the trucks used by the brewer or distributor will be in this class of delivery. Proper selection of equipment as to type, size, and make is a factor in delivery costs. In the purchase of trucks for this service, some mistakes have been made. These mistakes have been in most cases, the selection of equipment of too small capacity. There are few conditions in large cities where a wholesale truck of 50 to 100 case capacity is an economical delivery unit.

Our experience so far is that for most conditions, two sizes of wholesale trucks will be found the most practical and economical. The two sizes are trucks of from 135-150 case capacity and 160-180 case capacity. Conditions on some routes will justify wholesale trucks of still greater capacity. These larger size trucks would generally fit on routes comprising hotels and restaurants where the number of cases or barrels delivered

By H. P. Starbird,

Transportation Engineer, The White Co., Cleveland, O.

All four wheels of the tractor drive this Marmon-Herrington case-beer equipment. Models carrying from 182 to 513 cases are available. This one can take 305 cases.

IF you use Kendall Oil in your equipment, it will cut down your maintenance costs, give you a lower lubrication cost per mile. We say this . . . and we believe it to be true. It has proved true in over a hundred bus and truck fleets in this country.

But other fleets aren't *your* fleet. And it's your fleet you care about. The only way you can really prove to your own satisfaction that Kendall Oil means more economical lubrication for you is to test its performance *in your own equipment.*

We invite you to do this. Make a thorough trial of Kendall Oil. Establish definite cost figures Compare them with the cost figures of the oil you have been using. And the resulting performance story will be the strongest proof you can get of Kendall's lubrication economy.

Will you make such a test? We're willing to let Kendall Oil stand or fall on its performance in your motors . . . because Kendall has something that other oils don't have: a heritage of quality, stamina and long mileage which are made possible only by the Bradford Grade of Pennsylvania Crude . . . finest and costliest in the world . . . from which Kendall is refined, and by the special processes developed by Kendall for its refining. Tell us you want a test . . . and leave the rest to us.

KENDALL REFINING COMPANY
BRADFORD, PA.

NRA MEMBER U.S. WE DO OUR PART

KENDALL MOTOR OIL

Say "I saw it in FLEET OWNER"—It Helps!

WHAT TRUCKS FOR BREWERS? (*Continued*)

at each stop would be considerably greater than on the usual wholesale route.

Determination of the proper size truck for the most satisfactory and lowest cost delivery is controlled by many factors:—the number of stops, the number of cases or barrels delivered per stop, the distance between stops, traffic conditions, and many others.

The second class of delivery is retail delivery. This is the delivery of cases or cartons direct to the home of the consumer. This is a new type of beer delivery, little known 13 years ago. The truck used in this class of service will range in capacity from 50-100 cases. It is going to be interesting to see how this retail delivery develops and works out. Naturally, the cost of delivery per case to the retail customer will be higher than the cost of delivery to the wholesale customer, but where the brewer is delivering direct to the retail customer, he has, to off-set this higher cost, the elimination of the middleman.

Retail delivery presents more of a problem to the distributor. Delivery costs to the retail customer will be higher than to the wholesale customer because the average number of cases delivered at each stop will be less,—this means that the delivery time and the truck miles per case will be higher. Low retail delivery costs

This Indiana Model 85 has a deck-type body and sliding doors. Its capacity is 96 cases with room on the top for empties. There's plenty of advertising space for the brewer, too.

will be dependent to a great extent upon the volume of the retail business.

The question is—How is this volume business to be obtained? There is opportunity here for originality and ingenuity on the part of the advertising and sales departments. A great many brewers believe that one of the means of building up this retail business is by the use of de luxe truck delivery equipment, delivery equipment that has dignity, appearance, attractiveness, and appeals to the women. The woman who does not drink beer will give more consideration to the equipment that delivers her husband's case of beer than to the quality of the beer itself.

Economies can be effected in many cases by a combination of wholesale and retail delivery. Conditions that warrant such a combination are in localities where a residential section is adjacent to a small business section.

The third class of delivery is intercity delivery. This is the delivery from the brewery to the warehouse of a distributor in some other city. As the number of breweries in operation increases the intercity problem of the brewer will increase. The distributor's ability to compete with local breweries or other distributors in his city depends to a very large extent upon the trans-

This is an International 3-tonner of 170-inch wheelbase, with sleeper cab and semi-trailer. We don't have to mention the name of the brewer, do we?

portation cost from brewery to distributor. Every fraction of a cent per case or barrel saved in transportation cost benefits both the brewer and distributor from both a volume and profit standpoint.

A great deal of consideration has not as yet been given to the phase of the delivery. Several types of equipment are adaptable for this service, 4-wheel trucks, 6-wheel trucks, tractors and semi-trailers and truck and 4-wheel trailers. The selection of the equipment should not be a "hit-and-miss" proposition,—the question of the most adaptable unit for lowest delivery cost should be decided by a capable transportation man.

Even the drivers of the beer trucks must be different today. Thirteen years ago, the driver made his deliveries, collected his empties, had his delivery sheet signed and drove on. Today, the driver of a beer truck is a driver-salesman, and combined with his driver-salesman duties, are those of collector and accountant. He delivers his load, collects his empties, computes the rebates on the empties and collects the amount due. Driver contact with the customer is of increased importance today.

It is still too early to have much in the way of concrete facts in regard to beer delivery costs, but there are three facts the brewer and distributor will want to know.

(1) The cost-per-case or barrel for delivery to the store, hotel, or restaurant.

(2) The cost-per-case for delivery to the home of the customer.

(3) The cost-per-case or barrel for delivery to the warehouse of his distributor.

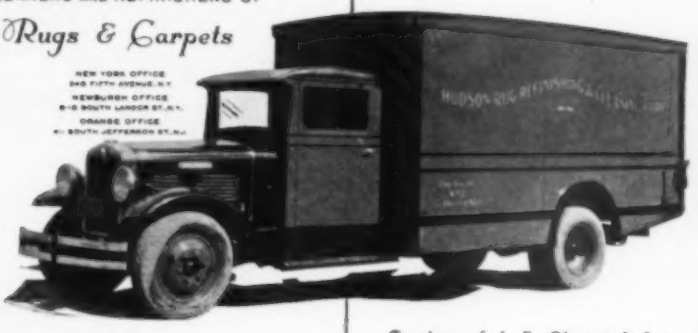
Low delivery costs are a matter of a proper transportation system, an efficient maintenance organiza-

(*Please turn to page* 40)

A Century of Progress in beer distribution. This Hendrickson truck and trailer makes daily deliveries of beer from Milwaukee to the World's Fair in Chicago.

HUDSON
RUG REFINISHING AND CLEANING CORP.

CLEANERS AND REFINISHERS OF
Rugs & Carpets



Courtesy of J. F. Glassey & Son, bodybuilders of Newburgh.

PLEASE REPLY TO
NEWBURGH OFFICE

Haskelite Manufacturing Corp.,
208 W. Washington St.,
Chicago, Illinois

Gentlemen:

Some time ago, one of our large panel trucks caught fire on the road. The fire originated somewhere underneath the cab. At the time, we had a very valuable load of Oriental rugs on the truck. The cab instrument board, all wire connections on the motor, etc., were totally ruined. However, no damage of any kind was done to the merchandise on the truck.

The panels on this truck were made of Plymetal and in as much as the paint was all eaten away, the panels checked the fire and saved balance of truck and rugs from damage. After inspecting this truck, we feel sure that, had the body been made of wood or composition boards, the damage would have been considerable to our merchandise.

May we advise you that we operate a fleet of trucks and everyone has Plymetal panels.

Very truly yours,

HUDSON RUG REFINISHING AND
CLEANING CORPORATION

HH/EAS PRES.

WASHING REFINISHING SHAMPOOING DRY CLEANING DYEING REPAIRING

FIRE PROTECTION
is only *one* of the
Extra Values
you get in
PLYMETL

The above letter, wholly unsolicited, describes how a discriminating fleet owner saved a substantial sum by using PLYMETL—fire protection, however, is only one of the extra values you get when you specify this *quality* metal faced panel. PLYMETL is "lighter and stronger", has greater impact resistance, and takes a more attractive finish. PLYMETL has *extra* value.

New York Distributor — Esdorn Lumber Corp.

HASKELITE MANUFACTURING CORPORATION
208 WEST WASHINGTON STREET, CHICAGO ILLINOIS.

Say "I saw it in FLEET OWNER"—It Helps!

Radiator Repairing • Lead Burning • Soldering • Brazing

ONE WAY TO DO IT USING A SMALL ACETYLENE TORCH

THE oxy-acetylene flame provides an easily manipulated source of intense heat which is used in welding and other heating operations where extremely high temperatures are required. There are, however, many other automotive heating applications, such as radiator repairing, lead-burning, soldering and brazing, where a lower flame temperature can be used to advantage. With burners designed for the admixture of atmospheric air, acetylene alone will give a flame hot enough for many purposes.

The small gas tanks that have for years been used for truck and motorcycle lighting have also found many other applications in the automotive field.

An inexpensive outfit has been developed consisting of a light blow-pipe handle and a set of special tips giving flames suitable for a wide range of work. The outfit is most conveniently used with a small gas tank, the same as is used on a motorcycle or truck, and a 6 ft. length of hose. Small furnaces for heating lead, paraffine, and the like are also manufactured.

A modern outfit consisting of light blowpipe handle and set of special tips.

Acetylene has advantages over liquid or other gas fuels. It not only produces a higher flame temperature than gasoline and coal gas or natural gas, but forms a flame that is non-oxidizing and non-carbonizing and can be perfectly controlled. Fire hazard is reduced since no liquid fuel is required.

An outstanding advantage of the outfit is its complete portability and the fact that it gets into action immediately. No preheating is required. It is necessary only to turn on the gas, light the torch, and the job is under way. The gas can be turned off between jobs.

The simplicity of an outfit of this character is worthy of particular mention. It is put to work with the mere lighting of a match. There is no fussing around with gasoline, kerosene or charcoal. It uses acetylene only and no air or oxygen are required, as the tips suck in the necessary air.

Charging plants supply gas exchanges through jobbers and distributing stations throughout the country. But a moment is required to trade an empty tank for a full one. Only the gas content of the cylinder is paid for since no rental charge is made for the use of tanks.

Soldering may be done either with one of the tips, or the blowpipe may be converted into a soldering iron by slipping the soldering copper over the end of the blowtorch tip and tightening a single setscrew. It can be maintained at the right temperature by the internal flame. Work does not have to be stopped to reheat or change the iron.

After a reasonable amount of practice with scrap material and a careful study of the instructions provided by the manufacturers of apparatus of this kind, ordinary jobs may be undertaken with confidence. Mastery of the art will come as a matter of practice and experience, if attention and observation are applied.

Thousands of fleet mechanics all over the country are taking advantage of the work which can be done with equipment of this kind. Such jobs as radiator repairing, all kinds of soldering, light brazing, lead-burning storage batteries, light preheating, etc., may be easily and quickly done with the handy acetylene torch.

These processes have their almost daily applications, even in the smallest shops. New fields have been discovered wherever equipment of this nature has been installed, which have not been confined to repair on automotive parts, but on other work as well.

The unit is especially liked by electricians for work on poles or underground or in any inaccessible place. It works equally well in any position and can be lighted without inconvenience.

In plant maintenance and production processes, where even slight delays are costly, the high temperature flame is found to do the work faster than other heat sources and time spent in preheating and refilling with liquid fuels is saved.

In laboratories the neutral character of the flame is important for many applications. Railway signal divisions have inspection cars equipped with blow torch units and floodlights, using the same fuel, for emergency work at night.

In the shops and in the field new uses for the unit are being constantly found. Due to its convenience, reliability and intense heat, it is found to be a time saver in almost all lines and it is rapidly replacing old style soldering and brazing outfits and blowtorches.

By H. E. Dunn

(EDITOR'S NOTE: In connection with this subject, we are now tabulating the returns to our Questionnaire on Welding and Cutting. The returns are very gratifying and the resumé will be interesting.)

FRANK TALKS ON ANTI-FREEZE

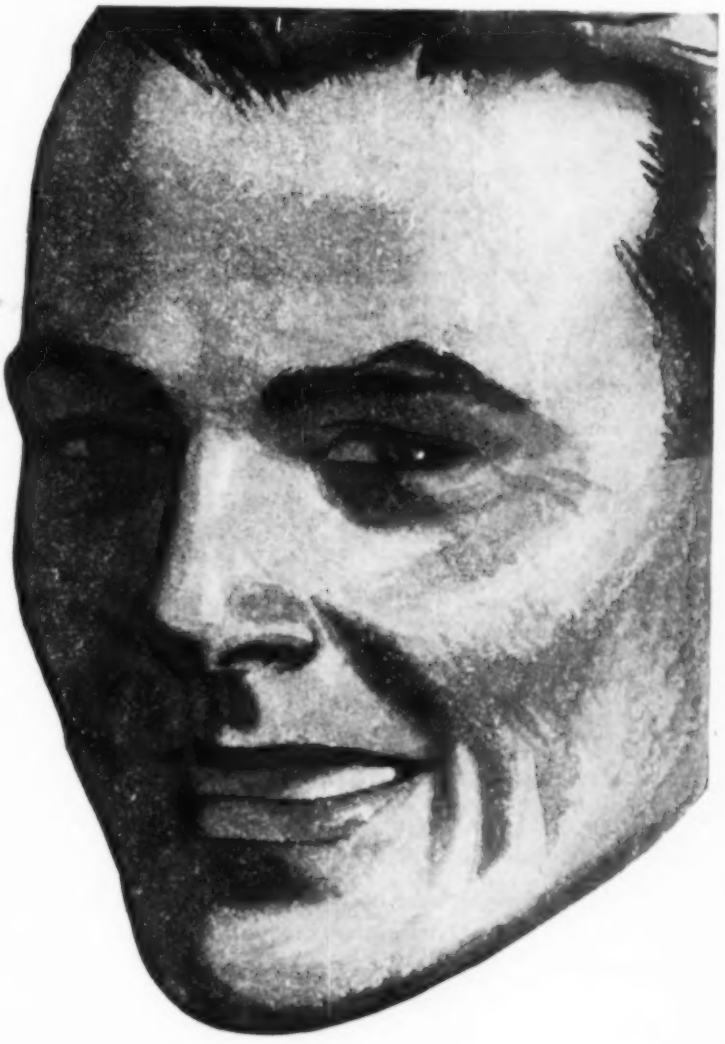
"ROSE-COLORED GLASSES don't show things in their true light. They're deceiving. It's the same way when you pick an anti-freeze. You want to see things as they really are, not as they seem to be. You want facts.

"Here are the facts about ZERONE. Reasons why this anti-freeze is a money-saver to fleet owners:

1. ZERONE keeps radiators and engines corrosion-free. Tests show it affects radiators, pumps and connections even less than plain water.
2. ZERONE gives complete radiator protection at all temperatures.
3. ZERONE has no offensive or unpleasant odor.
4. ZERONE does not readily evaporate.
5. ZERONE maintains cooling plant efficiency.
6. ZERONE is economical to buy and use.
7. ZERONE is made by du Pont, manufacturers of quality products.

"Get in touch with your source of supply for the particulars."

"Let's drop the rose-colored glasses and see what's what"



DU PONT
REG. U.S. PAT. OFF.

ZERONE
REG. U.S. PAT. OFF.

The Improved Methanol **ANTI-FREEZE**

E. I. DU PONT DE NEMOURS & CO., INC.
AMMONIA DEPT., WILMINGTON, DEL.

Say "I saw it in FLEET OWNER"—It Helps!

130. **A Gift to You.** Just to get acquainted, one of our friends in the automotive field is offering a liberal sample tube of gasket compound, claimed to be the "perfect" gasket seal. They say it's not affected by pressure, heat, anti-freeze or solubles. We haven't seen the sample, but since they offer a "liberal" one, let's see how liberal is liberal. After you use it up, you can buy some more through your jobber. No. 130 brings this little gift.

•

131. **What About Free Gas?** Are careless (?) employees operating their personal cars at your expense? Do they siphon or drain your truck tanks of a gallon or two now and then, for their own personal flivvers? You can make sure that they don't in the future, without any complicated bookkeeping system. This literature describes a new gas tank cap that locks on and must be opened with a key. We understand it only costs a buck, so if you save six gallons of gas, it pays for itself. Number 131 brings the literature. Write out the word "Sample" if you'd like one on a 30-day trial basis.

•

132. **No More Diluted Oil.** Wouldn't it be a splendid thing if you did not have to worry about gasoline getting down into the crankcase and diluting the oil? Well, here's a good brother who's gotten up a device that attaches to the engine and recovers crankcase gases, oil and water vapors, returning them through an automatic suction valve in the intake manifold. Besides insuring pure oil at all times, he says that it'll give upper cylinder lubrication and greater gas mileage, too. We don't know anything more about it as yet. If interested, we'll ask him to prove his claims if you'll but put down No. 132 on our coupon.

•

133. **Dollars You Can Save.** We venture a guess that you are pretty well fed up with the many claims made by various individuals, relative to saving money on this, and saving money on that. However, we've just run across a new book bearing the title "Dollars You Can Save." It proves how the new Bosch "Volt-O-matic" generator can save you money, keep your trucks or buses on schedule, and lower your operating cost per mile, as well. We're calling the book to your attention anyway. If you want a copy, Number 133 on the coupon brings it free.

•

134. **Hydraulic Action in Piston Ring Design.** There, in bold face type, is the title. It's one of those papers that you missed by not attending the S. A. E. Congress in Chicago. Our one great regret is that we haven't the room to run this paper in FLEET OWNER. But you won't be deprived of the opportunity of reading it—that is, if you put down Number 134 and mail us the coupon. And, we'll let you in on the low-down—it's not one of those highly technical engineering papers that treats with b. t. u.'s, m. e. p.'s, etc. It's the complete road experience of a large public utility fleet, doing the work in its own shops and supervising its own operation. Need we say more?

WHAT DO YOU READ?

HERE'S a hand-picked assortment of literature that is offered to you entirely without obligation.

We've even made it easy for you to get it. Fill in the coupon below, mail to the Editor, and let us do the work. We'll ask them to send it at once and not to bother you with salesmen, either.

135. **No More Sleet on Windshields.** Although it's a nice balmy September afternoon as this is being written, by the time this issue is in your hands, it will be high time to begin to think about keeping your windshields clear of rain, slush, snow and ice. And you'll have something tangible to work with, if you send for Number 135. It's literature covering a new, heavy-duty windshield defroster, especially designed for truck and bus use. It's well to be prepared.

•

136. **Another "Putting-On" Tool.** This one "puts on" standard or oversize hard valve seats. It counterbores the block and inserts the seats, then spinning metal around the seat for a permanent job. Hardened valve seats are here to stay. There's no question about it. Many engines will be good for 50,000 and more miles without attention to valves, when this becomes standard practice. They tell us that even 100,000 and 200,000 would not be too much. If you want information, without obligation, covering the various equipment for installing, regrinding (when necessary) and servicing present day valve equipment, put down Number 136. We do the work; you get the literature. And, once more, there's no cost or obligation.

•

137. **Motor Mechanics' Handbook.** If the contents of this book are as interesting as the title, we believe there are few who will regret sending for it. It's an authoritative book covering automotive applications of the lathe, in the fleet shop. You may know how to replace flywheel gears, how to true brake drums and how to machine differential flanges, but there are many other major jobs covered in this book. And it's yours for the asking, if you indicate it by Number 137.

•

138. **Popular Parts for Popular Cars.** You know, just as well as we do, what the fast-moving parts are. You also know, what the popular cars are. "Look at all three!" What popular car is hard on flywheel housings? Water pumps? Flywheel gears? Cylinder heads? These are but a few of the items covered in this new parts catalog. The prices and discounts will be interesting, although we don't know whether or not they'll knock your hat off. Write and see, brother; Write and see. This one is identified by Number 138.

•

139. **No More "Driver's Back."** Or is it "Floating Kidneys"? The trick is not so much to provide your drivers with Pullman car comforts, as it is to reduce maintenance costs on driver's seats. If you're constantly sewing up leather (?) where a coil spring has pushed through, or if you're having to do extensive (and expensive) recovering jobs on your seat cushions, it behooves you to investigate before you invest. And we're here to help you get the latest dope on sponge rubber truck and bus driver's seats. (If you're a bus operator, the passengers will like them too!) Number 139 brings all the details. Free, gratis, for nothing.

The Editor, FLEET OWNER, ...1933
90 West St., New York, N. Y.

Kindly send me without obligation, the following free books mentioned in the.....issue. (Literature will not be sent unless firm name is given.) Order by number.

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TROUBLE SHOOTER

(You Ask 'Em — We Answer 'Em)

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

We Recommend the Oil-Wetted Type

Question: What make and type of carburetor air cleaner would you suggest for gravel trucks, or stationary engines, where they operate in a great deal of dust?—D. & D., Baraboo, Wis.

Answer: We cannot recommend any particular make of automotive product. As to air cleaners, we think you will be interested in the oil-wetted, or oil-washed type, such as are illustrated on pages 20-22 of our April issue. We are sending you the names of the various air cleaner manufacturers under separate cover. Shut your eyes and take your pick.

●

O. K. to Drill Oil Holes in Pistons

Question: We have an old truck in our fleet with iron pistons, but no provision was made for an oil ring, and the pistons are not drilled. Would it do any harm to drill the pistons and use an oil ring in the bottom groove, below the pin? This job has a pressure lubricating system and it pumps quite a bit of oil, although the pistons and rings are tight?—W. L., Secaucus, N. J.

Answer: We think it might be a good idea to drill oil holes in the lowest groove of your iron pistons and use a good oil ring. You can take a piston of about the same size that is drilled, and copy the style of drilling, size of hole, etc. You might even drill the groove directly above the piston-pin.

We note that this job uses a lot of oil, in spite of the fact that rings and pistons are tight. If you have taken up on the connecting rod bearings considerably, it is possible that the bearings are by now a bit out-of-round, and that there is clearance at the sides (also ends) of these bearings.

If this is the case, and any great amount of oil gets out, the crankshaft will throw it up on to the cylinder walls in such quantities that very few, if any, oil rings can take care of so much oil. However, drilling the pistons can do no harm, and may help a lot. Your jobber who sells you the rings will give drilling instructions.

●

You Can Use One Still Hotter

Question: I have read in the July Trouble Shooter's Department about the hot plugs for 1930 Buick motors in G.M.C. trucks. We have also had trouble with the plugs fouling on account of oil, and note you say to use a hotter plug. We are at present using the AC type G-14, which comes with the job. Is there a hotter plug in the AC line that will work better in our oil-pumpers?—A. A. S., Weehawken, N. J.

Answer: Why not recondition the motors? If they are shooting oil, it is quite an expensive procedure to operate them in that condition, not only from the standpoint of the cost of the oil, but also from the poor performance and low gasoline mileage that you are very likely getting. But ours are not the duties of a preacher, so we will answer your original question.

In the AC line there is only one hotter plug that you can use in the 1930 Buick motors, according to our records. And that is the plug carrying the symbol "Gcp". The "cp" apparently means carbon-proof. We do not know whether or not this plug will operate in an oil-gusher, but at least we've answered your question, haven't we? We'd say, do a good reconditioning job. The plugs which you are at present using are quite hot-running plugs and if they can't take care of the oil that your engines are shooting, the engines must be in pretty bad shape.

●

Speeding Up Crankcase Refilling

TO the Editor: Your publication is received each month and is of great interest to me. I wish to pass on a suggestion for the benefit of other readers.

On many motors the oil filler pipe and breather are made of thin steel tubing with baffle plates welded in them. These plates collect a great deal of sludge so that when refilling the crankcase, the oil runs in very slowly.

A very cheap solution is to heat the tube with a torch that will melt or burn the plates clean. Of course, the motor should be clear of gas and oil to prevent fire while burning the excess sludge.—*O. M. R.*

You May Not Believe It!

(But It's True)

THE FACT:

ONE of the surest ways to combat tire failure due to lack of proper inflation is the use of self-sealing inner tubes, commonly known as "air containers," "puncture-proof" tubes, etc., which seal punctures on running wheels without the tire becoming flat.

THE PROOF:

HERE is an unusual case, brought to our attention some time ago, which substantiates the above statement of fact: A truck belonging to the fleet of the Ohio Match Company had a tire fitted with an "air container" travel 15,000 miles, during which time it picked up 42 nails, screws and other sharp bits of iron and steel. During the entire period of operation not one pound of air was lost, according to a report of J. A. Sanford, Mgr., Ohio Match Co., Spokane, Washington.

TROUBLE SHOOTERS' DEPARTMENT (*Continued*)

How to Time a WTU Buda

Question: In timing a truck with a WTU Buda engine, we are having considerable difficulty. None of the mechanics in the shop can seem to get it right. Please let us have the authentic ignition timing, and also the valve timing, as originally intended by the engine manufacturer.

Answer: On Buda WTU engines, the ignition should occur at .155 in. piston travel, before top dead center, with the spark fully advanced. The intake valve should open at .087 in. piston travel, after top dead center. If you carefully follow these settings, using a dial gauge or other device to measure the piston travel, you should have no difficulty.

●

A Small Light for Big Jobs

THIS peep-hole light is extremely valuable for searching out small parts of equipment to be repaired or inspected. It enables the repairman to thoroughly inspect the bearings, oil rings and small parts of motors and other equipment without disassembling.

Installed at the East Pittsburgh works of the Westinghouse Electric and Manufacturing Company, this inexpensive miniature spot light was constructed from an ordinary fountain pen type flashlight. It is attached to a flexible cord and arm in a convenient position over the bench and is energized with a small transformer mounted on the wall.

As the ordinary extension light is rather cumbersome and cannot be used for getting into the interior parts of small apparatus this trouble light has proven itself to be a time saver and a valuable addition to the inspection bench. When not in use the light may be placed in the receptacle at the end of the arm and swung aside until needed.

●

No Wheel Slippage on Rails?

"AS a regular and interested reader of your FLEET OWNER magazine, I have noted with considerable interest the various explanations advanced relative to your question about wheel slippage on railroad cars when negotiating turns, and despite the fact that some explanations have been advanced by railway employees, my observance of what happens differs from the theories advanced, and I want to add my idea to the collection.

"It appears to me that ordinarily there is *no slippage of either wheel*, despite the fact that both wheels and the axle shaft are all one solid piece of steel, and that on a turn the outside rail scribes a greater arc, and therefore, the wheel traveling that rail must necessarily travel a greater distance than the inner wheel.

"The reason there is no slippage is accounted for in the design of the face (that part that contacts the rail) of the wheel. Each wheel has a flange on the inner rim, but the face of the wheel is not flat or parallel with the axle, rather it tapers off from the base of the flange to the outer edge of the wheel, thus the diameter of the wheel at the base of the flange is larger than at the edge opposite the flange. Therefore, in negotiating a turn, centrifugal action forces the outside wheel flange against the rail and onto the larger portion of the wheel and the flange of the inside wheel away from the rail or on to the small portion of that wheel; thus, the two wheel diameters contacting the rails automatically change, permitting the outside wheel to travel farther in one revolution than the inside one, with the result that no slippage occurs.

"My statements are readily verified by observing the design of a new railroad car wheel."—*Clarence J. Martin, Supt. Motor Transportation, Phillips Petroleum Co., Bartlesville, Okla.*

●

Wants to Mix Gasoline

Question: How will it work if we mix a percentage of anti-knock gasoline with regular low-test gasoline, for use on our 5-ton dump trucks and other heavy duty vehicles?—V. C. C., Columbus, Ohio.

Answer: We believe it is better to use a straight anti-knock gasoline, such as is sold commercially at filling stations, instead of trying your own blend. If the trucks are not more than five or six years old, it will be found advantageous to use an anti-knock fuel, which tends to reduce carbon knocks, carbon formation and other common motor ills.

Should you desire to mix fuels, however, and want to use equal amounts of anti-knock and low test gasolines, you can expect an improvement over the operation with low test gasoline, but this improvement would only be about 25 per cent of what it should be, were you to use a straight anti-knock fuel. This advice comes from one of the engineers of the Ethyl Gasoline Corporation, New York City.

If the trucks are more than six years old, and have low-compression engines, it would seem advisable to use a good standard brand of gasoline and let it go at that, although remarkable claims are made with leaded fuels, even with relatively low compression engines. In fact several "regular" gasolines now have a certain amount of tetraethyl lead in them, at regular gasoline prices.

●

"Straight Rating" Defined

Question: Will you kindly explain just what is meant by the term "Straight Ratings" as applied to motor truck capacity ratings?—A. J., New York, N. Y.

Answer: As we understand it, "Straight Rating" is the truck capacity rating method used to give the proper carrying capacity. It is simply the total gross weight, including load, under which a given truck and tire equipment will operate with maximum economy and efficiency. The proper payload is accurately determined by subtracting the combined weights of chassis and body from the "Straight Rating."

JOHN LAW SEZ:

(Recent Court Decisions as Reported by National Highway Users Conference)

ARKANSAS

Tonnage Limited by License Fee

A TRUCKER must limit the load on his truck to the tonnage under which it was registered, the Arkansas Supreme Court held. In this case, the truck being used was rated by the manufacturer as a 2½ ton truck and the license fee had been paid based upon such tonnage. At the time the truck was stopped and the driver was arrested it was carrying 5½ tons. The Court held that if the trucker wished to have a greater tonnage than the rated capacity, he should have made application and paid the license fee for the greater load.—*Commercial Warehouse v. State. Arkansas Supreme Court. 62 S. W. (2d) 20.*

CALIFORNIA

Limitation Under Certificate

A TRUCK owner who is operating under a certificate which permits him to haul petroleum products may not under such certificate haul vegetables, the Supreme Court rules in sustaining an injunction against a defendant trucking company.—*Coast Truck Line v. Asbury Truck Co. Sup. Ct. of California. 23 P (2d) 513.*

GEORGIA

Tax on Bus Terminals Held Void

MUNICIPALITY may not levy an occupational tax—license tax—for keeping a bus terminal under Motor Common Carrier Act approved August 27, 1931, which prohibits a levy by any municipality, village, township or county of any excise, license or occupational tax of any nature on the equipment or any incidents of the motor carrier's business. —*Southeastern Greyhound Lines, Inc., v. City of Atlanta. Sup. Ct. of Georgia, June 14, 1933. 170 S. E. 43.*

LOUISIANA

Imported Gas Subject to Tax

GASOLINE which was imported in tank car lots from other states, placed in a central storage tank and used in machines employed in the construction of levees was held subject to the gasoline tax. The Court held that the tax was an excise tax and not a property tax and that it was laid, not upon the gasoline, but upon the right or privilege of selling, using or consuming it. Under the Louisiana Statute, it did not matter whether the gasoline is used in machines propelled upon the highway or otherwise, the tax being upon the use to which the gasoline is put, and gasoline stored, upon withdrawal, becomes subject to the tax.—*Trinityfarm Const. Co. v. Grosjean. Sup'r. of Public Accounts, et al. District Court. E. D. La. 3 F. Supp. 785.*

NEW JERSEY

Trucks Carrying Persons Prohibited

A WARNING that truck owners who permit their vehicles to be used for transportation of persons for hire face prosecution has been issued by Motor Vehicle Commissioner Harold G. Hoffman. Such practice is a violation of the law relating to license plates and also of the law requiring a proper certificate of liability insurance.

The practice, Mr. Hoffman states, has been particularly prevalent in connection with the transportation of crowds to and from sea shore resorts. This does not apply to owners who donate the use of their trucks to religious or charitable organizations. However, the Commissioner believes the truck owner to be liable for personal injury to any of the passengers regardless of whether fare was collected.—*Release from Commissioner of Motor Vehicles. Aug. 5, 1933.*

PENNSYLVANIA

Exemption from Common Carriage

"LOCAL transportation between points in the same delivery area and unconnected with rail carriage is not included in what is ordinarily considered 'express transportation business' ", the Commission stated in an order holding that the Railway Express Agency, Inc., did not have the right to engage in a local transportation business under its certificate giving it the right to "conduct an express transportation business within this commonwealth."—*Railway Express Agency, Inc. Docket 20155. August 29, 1933. Pa. Public Service Commission.*

UTAH

Guest Rider Injured on Truck

IN this case, a guest rider on a truck was held not able to recover against an insurance company whose policy was issued to cover negligent operation of the truck in which policy there was the provision that the liability was limited in the case of commercial vehicles to injuries sustained only in the business there set forth (in this case "merchant" had been inserted in the policy) including loading and unloading and incidental pleasure use for the named assured's family. In a separate opinion, Justice McDermott stated, "I doubt if an owner's liability insurance is suspended whenever a driver picks up a friend."—*Snyder v. National Union Indemnity Co., Circuit Court of Appeals, Tenth Circuit. 65 F (2d) 844.*

WASHINGTON

Farm Carriers Held "For Hire"

WHILE persons hauling agricultural products are exempted under the section defining contract haulers, the court held that the definition of for hire carriers is sufficiently broad to include them.

The law which provided truck and trailer fees shall be based upon carrying capacity except for vehicles used in the transporting of well-drilling apparatus, which latter vehicles are charged a flat rate of $3 was held not to be unreasonably discriminatory. The court stated, "It may be easily conceived that the Legislature, taking into consideration the character and use made of the highways by well-drilling machines, etc., found that such use was seasonable and intermittent, and for this reason such machines were classified on a lower fee basis than was required of motor vehicles making use of the highways continuously."—*State ex rel Scott v. Superior Court of Thurston Co., et al. Sup. Ct. of Wash. 24 P (2d) 87.*

WISCONSIN

Company Truck Not Carrier

A THEATRICAL company could not recover under its insurance policy insuring them for loss of goods sustained while in custody of a common carrier where the truck in which the goods were being conveyed at the time they were destroyed by fire was owned by the theatrical company. The truck being owned by the theatrical company was a private truck and was not being used in common carriage. In defining elements of common carriage the court said, "A common carrier has been defined to be one who undertakes, for hire or reward, to transport from place to place, any passengers, or the goods of any persons who choose to employ him."

"His business must be regular and customary in its character, and not casual only. It must be conducted as a business, and must be of such a general nature that a person carrying it on is bound to convey the goods of all persons who offer to pay the costs of transportation. It is not sufficient that a person occasionally undertake to carry goods. In order to impress upon one the character, and impose upon him the liabilities, of a common carrier, his conduct must amount to a public offer to carry for all who tender him such goods as he is accustomed to carry."—*National Union Fire Ins. Co. v. Frisco Frolics Musical Comedy Co. Circuit Court of Appeals, Seventh Circuit, 65 F (2d) 928.*

QUESTION of the MONTH

"By far, one of the most valuable departments to be found in any automotive publication. Every fleet man should be delighted to cooperate."—A Reader

Here are Some of the Most Interesting Replies to Question No. 36:

Bus Operator Changes to 6-Volt Coils

"WE have had some trouble with voltage control regulators, the spark coil giving us the most trouble of the ignition units. We have changed from 12-volt coils over to 6-volt coils with adapters, and this so far has eliminated our previous difficulties. Other sources of electrical annoyances are condensers, contact points, etc.

"Sixty per cent of our road troubles are of an electrical nature. All of our vehicles are equipped with voltage regulators. We find that if we get sufficient voltage, the amperage drops off. However, it is our opinion that all commercial vehicles should be equipped with voltage regulators.

"We do not find standard electrical equipment sufficient for our needs. We have to rebuild our battery boxes to house a 13-plate job, instead of 11-plate, thus doubling their life.

"One man handles our electrical maintenance. The publication of tests that can be made in the shop on different type voltage regulators; also advertisements of same would be helpful. There seems to be a demand for accurate-reading volt and ampere meters that do not cost a fortune."—*Elmer Fischer, Foreman, Lake Shore Coach Co., Sandusky, Ohio, operating a fleet of 12 buses and 3 passenger cars.*

●

Battery Attention Eliminates Troubles

"STRICT attention to storage batteries will eliminate most electrical troubles, we believe. Our batteries are filled every two weeks and washed, steamed and tightened on the first of every month. We do this religiously and electrical troubles are a thing of the past with us.

"We believe that all commercial vehicles should be equipped with voltage regulators, where possible, or else low-speed generators that will create voltage at low speeds and cut out at high speeds. This seems to be especially desirable for house-to-house delivery units. For long hauls, the voltage regulator would take care of the current.

"All of our electrical work is done by one outside man who is in that line of business and who has invested a lot of money in the proper testing equipment. I believe this is good procedure in the smaller fleet, as I have been in the electrical end of the automotive business for many years and know that the average garage mechanic cannot do electrical work properly. Besides, there is too much other equipment that he needs first.

"In our own shop we use a coil and condenser tester and a motoscope for other engine trouble. We find these instruments very satisfactory."—*E. G. Smith, Garage Supt., Sanitary Milk Company, Canton, Ohio, operating a fleet of 44 trucks.*

●

Work in Own Shop Eliminates Failures

"SINCE we have been doing all of our own electrical work in our own shop we have eliminated the majority of our troubles. This also included a program of close inspection of all units. Our principal electrical troubles are among generators, spark plugs and over-charged batteries. Regular inspection of the voltage regulators has also helped.

"Our experience with voltage regulators has been very satisfactory and in our opinion, all commercial vehicles should be equipped with voltage regulators, which should be checked regularly.

"All of our vehicles require heavy electrical current. Standard equipment is adequate on the later models, but on some of the older buses we have had to install larger capacity batteries and generators. Ninety per cent of them have voltage regulators.

"Our electrical maintenance is under the supervision of one man and we find that factory service bulletins are of great assistance to him. We are also having some trouble with fuel pumps."—*C. A. Martin, Supt. Maintenance, White Star Lines, Washington, Pa., operating a fleet of 102 buses.*

●

Wants Fewer, Heavier Plates in Batteries

"PRESENT construction of storage batteries could be improved, we believe, by using fewer plates of heavier construction which would give longer life to the battery. We find that our batteries do not stand up, even when proper charge is maintained. Other troubles that we have include coils, generators, contact points, starting motors and spark plugs.

"About 30 per cent of our road calls are due to electrical troubles. We have no voltage regulators but believe that all commercial vehicles should be equipped with them.

"Among the constructive things we have done in this direction is to make more secure battery mountings, choose better (proper) type spark plugs, have our men dismantle units that have failed in service, and study them as a precaution against future troubles."—*A. V. Nidy, Garage Supt., Peoples Outfitting Co., Detroit, Mich., operating a fleet of 23 trucks, 6 trailers, 11 passenger cars and 7 other vehicles.*

ELECTRICAL EXPERIENCE EXCHANGED (*Continued*)

Busses Should Have Voltage Regulators

"ALL of the buses in our fleet (12) are equipped with voltage regulators. They perform satisfactorily, if they are regularly inspected and properly maintained. In our opinion, all buses should be equipped with voltage regulators. We find standard electrical equipment on our buses entirely adequate for our requirements.

"Our most common electrical troubles include burned-out lamps, generator trouble, over and under-charged batteries and spark plug failures. Of our road calls, about 15 per cent are due to electrical troubles. We find it difficult to keep the water level up in our storage batteries. To combat our electrical annoyances, we have sealed our generators, installed larger batteries and make regular inspection of batteries, spark plugs, etc."—*J. E. Lawless, Supt. of Equip., El Paso Electric Co., El Paso, Tex., operating a fleet of 5 trucks, 12 busses and 5 other vehicles.*

●

Larger Batteries for Police Radio Cars

"THE only electrical difficulties we are experiencing are from burned contact points and under-charged batteries. To overcome the latter we had the generator armatures rewound, to give the maximum charging rate at lower speeds. This was necessary because our Police Cars are equipped with radio. We also installed larger batteries, with thicker plates and more ampere hours.

"Our most common battery troubles are caused by premature depreciation, due, no doubt, to 25-ampere charging rates. Of our road failures, only 5 per cent are due to electrical troubles."—*M. S. Crossley, Supt., Police Dept., Seattle, Wash., operating a fleet of 54 passenger cars and 3 trucks.*

●

Wants Better Condensers, Coils, Switches

"SEVENTY-FIVE per cent of our road calls are due to electrical troubles. We have the most trouble with coils, condensers and starter switches. To minimize these difficulties we replace defective parts and endeavor to keep them free of moisture and grease by periodic inspection and test.

"Our operations do not require the use of voltage regulators. Practically none of our vehicles need heavier-than-standard electrical equipment. Our most common battery troubles are caused by internal shorts.

"One man has charge of our electrical work, assisted by proper equipment and educational literature on the subject."—*H. R. Grigsby, Supt. Trans., Oklahoma Gas & Elec. Co., Oklahoma City, Okla., operating a fleet of 79 trucks, 292 passenger cars and 47 other vehicles.*

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 38—Lifts, Pits, Jacks, Horses, etc.

What type of elevating equipment is used for lubrication and repair work? (Please check)

☐ Lifts ☐ Pits ☐ Jacks ☐ Horses ☐ Hoists Others .....

Please explain in detail the type of equipment you have checked above, also any advantages or disadvantages ....

.....

.....

Which type do you PREFER?.....

If lifts are used, are they of the free-wheel or channel type? .....

How many garage hand jacks have you? ..... Dolly jacks? ..... Other jacks?.....

Are your garage jacks mechanically or hydraulically operated? .....

How many horses (adjustable or otherwise) have you?.....

Are these horses home-made, or of the manufactured type?.....

How many overhead hoists (stationary or portable) have you? .....

What other lifting equipment have you?.....

What method is used for removing bodies, when necessary?.....

In your opinion, can better repairs be made with trucks over lifts and pits; or over jacks and horses?.....

Is each vehicle equipped with a suitable jack while on the road? .....

If not, why not? .....

Which type of jack do you prefer? (Please check) ☐ Mechanical ☐ Hydraulic

CONFIDENTIAL: What special equipment of this type do you NEED?.....

Remarks .....

.....

We operate.....Trucks; .....Buses; .....Pass. Cars; .....Other Vehicles

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....

Address .....

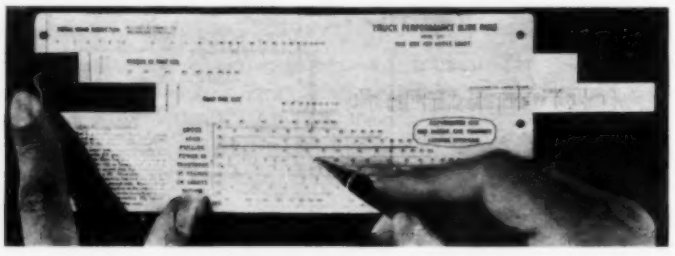
City and State .....

Your name .....*Position*.....

for ROAD *and* SHOP

Free Slide Rule—Get Yours?

SELECTING the correct truck and equipment for a definite hauling job has long been looked upon as a problem for the transportation engineer. Proper gear ratios, tire sizes, wheelbases and other features must be specified to insure maximum economy, performance and satisfaction.



In the past many trucks have been selected largely by guess-work. Capacity has been specified merely by tonnage rating and principal body dimensions. This "hit-or-miss" method has frequently been responsible, transportation engineers say, for heavy operating losses and unsatisfactory performance.

To enable the fleet operator after making a careful survey of any specific hauling problem, to select the truck best suited to the job and to specify the proper gear ratios and tire sizes to insure satisfactory performance ability, Reo transportation engineers devised and have recently improved a truck performance slide rule.

Based on the same factors that the trained engineer must take into account, the rule indicates instantly the safe, economical load pulling capacity, hill or grade climbing ability in the different gears, and safe maximum road speed for any motor truck or tractor-trailer combination for which engine and power unit chassis specifications are known. Engine power or torque, axle and transmission gear ratios and tire sizes all receive proper consideration in solving any problem.

One side of the rule, which is of convenient pocket size, is printed in black and is used for load pulling and grade climbing determinations. The other, printed in red, is used for speed calculations. The operation is extremely simple, the directions being clearly printed on the rule.

In addition to aiding in selection of new equipment the slide rule enables the fleet owner to check the fitness of the equipment he is using to his hauling problems. Frequently it points out clearly the causes of poor operating economy and other operating difficulties and enables the operator to make changes that will effect economies, or select new equipment ideally suited to his individual needs.

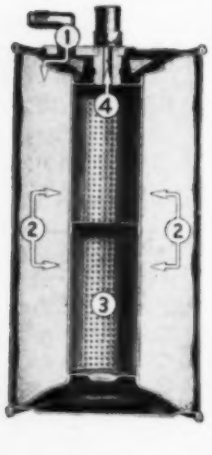
(EDITOR'S NOTE: *Last month we received a great many requests for samples of this slide rule. If you have not as yet received one, either from your truck dealer or from the factory, we'll be glad to see that you get one, without cost. Just drop us a line.—H. C. F.*).

•

Three New AC Oil Filters

THREE new oil filters complete with all fittings for installing on practically all cars not originally equipped with oil filters, have just been introduced by AC Spark Plug Company, Flint, Mich.

The three new filters, which are built for renewal every 8,000 miles will fit virtually all cars including such big production automobiles as Chevrolet, Plymouth and Pontiac. The new filters employ the well known "Depth" type filtering principle, so called because the oil must pass through the entire "depth" of the filtering element, as shown in the accompanying illustration. This principle is embodied in all AC filters.



Typical cutaway view of "depth" type AC oil filter.

1. Dirty oil from the crankcase enters filter under pressure.
2. Filtering material which collects all foreign matter as dirty oil passes through.
3. Collector tube into which filtered oil enters after passing through filtering material.
4. Outlet through which filtered oil passes from collector tube to crankcase.

In the "depth" type filters every drop of oil must pass entirely through an extra thick filtering element made of a special heavy cotton fibre. This removes the dirt, grit and abrasive material from the oil, it is claimed.

In a recent series of interesting operating tests it was revealed that the "depth" type oil filter removes a pint of dirt, sludge and abrasive material from the oil in 8,000 miles of average driving. The tests further showed that engine wear is five times more rapid with unfiltered oil than with filtered oil.

The price of the new complete filters is $2.75 each. Further details and discounts will be sent by AC Spark Plug Company, Flint, Mich., on request. Sold through automotive jobbers.

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"Jumbo" Stud Pullers Are New

THE Van Norman Machine Tool Company has announced the introduction of the new "Jumbo" Stud Pullers. This is an entirely new type of stud puller which the makers claim will prevent undue breakage of studs, will eliminate unnecessary marking of the stud and will remove the most difficult and stubborn studs.

The principle employed is that of three cams giving three point contact on the stud, leverage or power being applied centrally. Three sizes are furnished by the makers to take the entire range from $\frac{7}{16}$ in. to $\frac{5}{8}$ in. The set of three is put up in a steel box.

The use of Jumbo Stud Pullers will speed up dismantling motors preparatory to boring, will eliminate delays of digging out broken studs and eliminate the continuous replacement of ordinary types of single cams. Complete information and prices may be obtained by writing Van Norman Machine Tool Company, 164 Wilbraham Street, Springfield, Mass.

WHITE BUILDS for LOW-PRICE MARKET

A PAIR of trucks, characteristically White throughout, are offered by The White Company, Cleveland, Ohio. These two models, known as White 701 and 702, mark the entry of this Company into the low-priced field with what have been called "100% White-built" vehicles. Their decision to manufacture and market them is based upon the belief that sufficient volume will be enjoyed to maintain the introductory price, which is said to be the lowest in White history, for a job of this kind.

An interesting feature of these models is the arrangement of chassis layout, whereby more load is thrown on the front axle than in conventional trucks, so that better weight distribution on tires is secured. This is obtained by placing the engine in a recessed dash, thus allowing the cab to be placed further ahead.

The 701 is rated as an 8,000-lb. gross weight chassis, and the 702 as an 11,000-lb. Wheelbases are 132 inches and 156 inches respectively, and the 701 standard model carries 7.00 x 20 single balloon tires, while the 702 model utilizes the same size, but with duals at the rear. Larger sizes of tires are available, of course.

While the characteristic White radiator has been retained, it is modified somewhat to give a slight V-type front, with swept-back, rakish effect. The arrangement of hood, cowl and cab are laid out accordingly and present a very distinctive appearance. The radiator shell is chromium plated, as is the vertical grill accompanying it.

Of more than passing interest is the engine, a White-built job, which is an L-head, 240-cubic-inch six, having a bore stroke of 3-5/16 x 4-5/8 and delivering 150 lb. ft. of torque and 75 b.h.p. As is to be expected, full-pressure lubrication is utilized, even to the wrist-pins, which are of the full-floating type. A special oil-pump-intake and oil filter are stressed by the makers.

Another quite paramount feature is the inclusion of "Stellite" screwed-in exhaust valve seats, as standard equipment in the integrally-cast cylinder block and crankcase. Other pertinent engine features include plated cast-iron pistons, steel-backed main and conn. rod bearings and an alloy-steel, counterweighted crankshaft, fitted with vibration damper. Water-pump, fan and generator are driven by double-v-belts, while oil pump and distributor are operated from a gear on the camshaft.

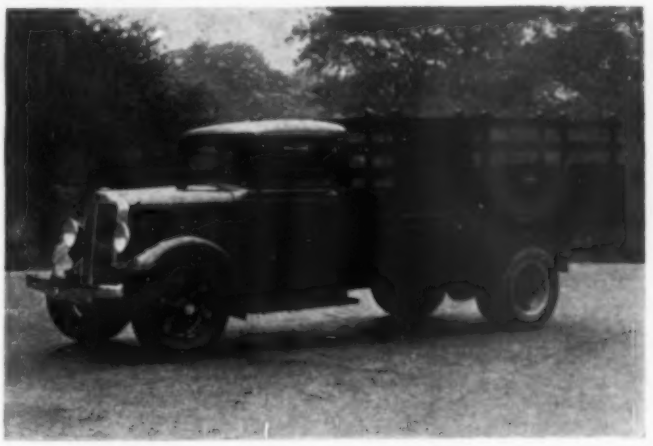
Clutch is of the single-plate, dry type, with automatic adjustment and ball bearing throw-out. A four-speed transmission is used, having White heat-treated, case-hardened gears. Ratios are: First, 6.4; Second, 3.0; Third, 1.7; and direct on Fourth. A power-take-off opening is provided.

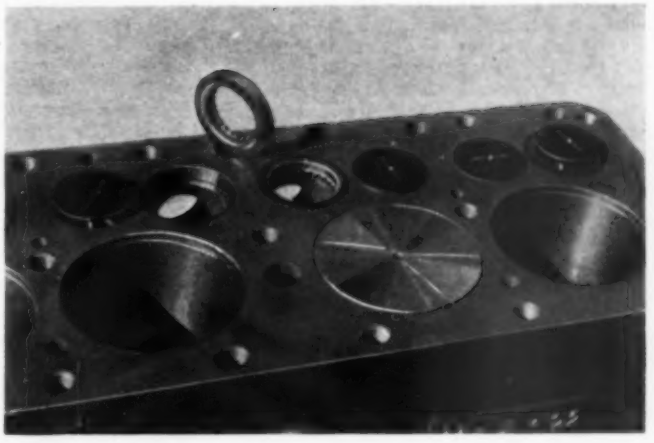
The White-built rear axle is a new full-floating banjo type with straddle mounted pinion in the center, and with three ratios; 5.1, 5.88 and 6.86. The axle housing is cast in one piece, with pressed-in steel tubes tapered roller bearings for the wheels and inspection cover at the rear. Service brakes are four-wheel hydraulic with reaction type booster system, using gun iron drums.

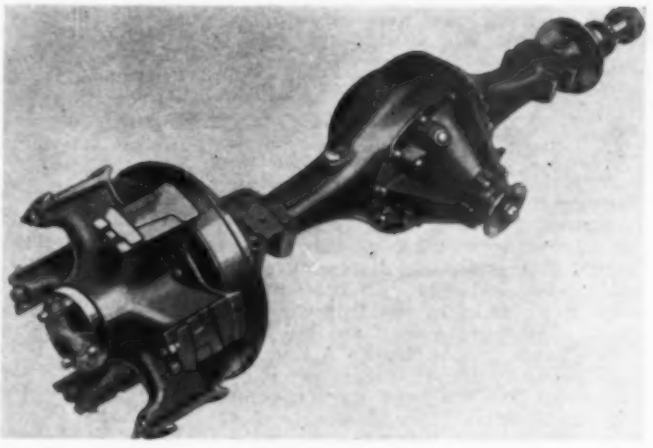
The frame has a section of 7 inches by 2-25/32 by 7/32, and is heat-treated on the longer wheelbase. Cross-members are full depth and gusseted. The universal joints are of the needle-bearing type with a two-jointed shaft for the longer wheelbase. The 21½ gallon gasoline tank is carried under the driver's seat, with a mechanical fuel pump operated from the engine.

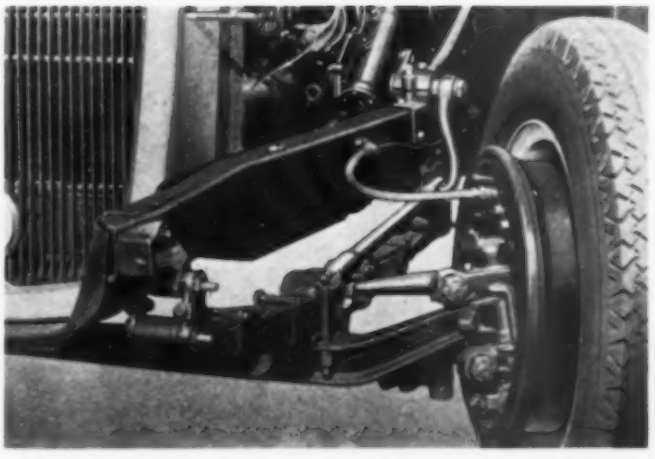
The front axle is of the reverse-Elliot type with tapered roller wheel bearings. The emergency brake is mounted at the rear of the transmission and the brake drum is of special gun iron.

Particular attention has been paid to driver comfort by furnishing a 60" cab with more than the usual distance allowed for the driver from dash to back of cab. Driver seat and steering column have three positions arranged for. The dash floor boards and toe boards are insulated against heat, and ventilation is worked out to maintain comfortable conditions during hot weather operation. Springs are semi-elliptical with double wrapped eyes front and rear, and with helper springs on both models. Standard wheels are cast steel spoke type, with disc wheels optional at extra cost. Spare tire carrier is provided at rear of frame.









as WE GO to PRESS

(News from the Manufacturers)

A FOUR-WHEEL-DRIVE truck, the Indiana Multi-Drive, is announced by The White Company, Cleveland, Ohio. Known as Model 18X4, it has a gross rating of 21,000 lbs. This job is a standard truck throughout, built exclusively of nationally-known truck units, the major ones being a 94 h.p. Hercules six-cylinder engine, Wisconsin front and rear power axles and transfer box, Brown-Lipe transmission and clutch, Spicer universals, Budd wheels and Ross cam-and-lever steering. In addition to road-building work, the new truck is said to be "made-to-order for rigorous dump truck operations, especially those involving pulling out of deep pits and crossing rough terrain. If you'd like literature, The White Company will be glad to send it without obligation.

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REO Motor Car Company's production for the entire year of 1932 was exceeded in their first nine months of 1933, R. H. Scott, Reo president tells us. The increase is reflected in the Speed Wagon and Truck Division as well as in the passenger car business of the Company, according to the report.

•

ONE of the interesting records for 1933 in the automotive industry is revealed in the report of the Marmon-Herrington Company, Inc., makers of all-wheel drive trucks, for the first nine months of this year. During this period the Company produced and sold 494 per cent more truck units than in the full year of 1932. The sales record to date includes sales to the U. S. Army, as well as to various states, counties and cities for highway construction and maintenance, the all-wheel-drive type of design being particularly adaptable to such operations. The Company states that in addition to this, its sales include trucks for various commercial fields and large export shipments.

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THE job of Sales Manager for Wilkening Manufacturing Company, Philadelphia, Pa., makers of Pedrick piston rings, is now being filled by Earl C. Chatfield, via a promotion. Mr. Chatfield joined the Pedrick organization in 1925 and has done considerable sales work in the South since then. His most recent territory in the Southeast has been divided into two new ones, the Western portion being handled by L. V. L. Robertson and the Eastern portion by Ralph R. Knepper. Our best to you, Mr. Chatfield!

AS this issue goes to press, we observe a ruling given out by R. W. Lea, Deputy Administrator of NRA, concerning new car sales to fleet owners. It says, in part: "Fleet sales are not subject to the NADA code, which concerns sales only at retail." It has not yet been definitely determined whether the manufacturers will sell to fleets at a discount, or whether dealers may act as "wholesalers" in making their own fleet sales. So far as parts are concerned, the code permits discounts on parts sold to "established service stations" who fly the blue eagle. This will probably be interpreted so as to include fleet owners.

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USERS of Toledo water pump parts will be interested to know that the following jobbers have recently added this line of replacements: Reinhard Bros. Co., Minneapolis; P & M Accessory Co., Galesburg, Ill.; Auto Parts & Gear Co., Chicago; Williams Motor Corp., Petersburg, Va.; Baldwin Auto Parts Co. and Robertson Rebabbitting Service, Detroit; Automotive Parts Co., Pittsburgh; Craig Motor Service Co., Fairmont, W. Va.; and Grinold Auto Parts, Hartford, Conn. We mention this for your convenience in ordering.

•

RADIO for motorcycles? Sure. The Indian Motorcycle Company of Springfield, Mass., recently exhibited a police motorcycle with the American Bosch Model 119, 5-tube superheterodyne. The receiver is a one-piece job with self-contained speaker and mounts on the handlebars of the motorcycle. The metal cover of the radio chassis acts as an antenna. The effect of police radio in combating crime is in itself significant. United American Bosch, Springfield, Mass., will be glad to give you all the dope on this.

•

DODGE is out with a dual-purpose model to appeal to traveling salesmen and to delivery men who must furnish their own transportation in the distribution of samples and merchandise. Essentially the vehicle is a standard commercial sedan, so arranged so that the owner may in a few minutes convert it into a spick-and-span, full-fledged two-door passenger sedan devoid of all commercial aspect. For the conversion, an upholstered rear seat is furnished, together with rear side panels of glass, behind which a removable steel sign may be used to display the firm name or trade-mark.

PRODUCTION has been started, by Federal Motor Truck Company of Detroit, on four new six-wheel trucks. These include Model 16 with single drive and Model 17 with tandem drive, of 3-ton capacity. The other two are known as Models 36 and 37, are rated at 4½-tons and have single and tandem drive respectively. All have six-cylinder engines, single-plate clutches, balloon tires and hydraulic brakes. The factory will send you the complete details, if you want them.

•

YOU may be interested to know that sales of first-line tires manufactured by The B. F. Goodrich Rubber Company showed an increase of approximately 300 per cent during the 3-month period ending September 30th, over the corresponding months last year. The improved sales totals are attributed to the upturn in general business and a product improvement introduced by the Company early this year, the Goodrich president states.

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YOU no doubt have read in the newspapers of the Pennsylvania railroad's announcement of door-to-door pickup and delivery of l.c.l. freight. According to their statement, they will "contract, wherever possible, with local trucking companies or firms." While the P. R. R. is the first large eastern railroad to launch this service, it is believed that other carriers in self-defense, will adopt the system.

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THE Toledo Steel Products Co., manufacturers of Toledo valves, water-pump parts and chassis bolts and bushings, has announced a new Blue Print Bolt and Bushing Catalog. This catalog contains an alphabetical listing of cars, showing make, year, and model, and a numerical listing by part numbers, as well as a progressive size chart. Included in the Toledo Blue Print Line are king-bolts, and bushings, tie-rod bolts and bushings, spring-shackle bolts and bushings, tie-rod and drag-link ball and seat assemblies, for both passenger cars and trucks.

•

NINETY-TWO new Plymouth automobiles were recently delivered to the Detroit Police Department. Forty-five of them were two-door sedans, equipped with radio receivers as patrol cars, while the forty-seven coupes comprising the balance, went to the Board of Education.

COST-KEEPING *for the* FLEET SHOP *(Continued)*

operation on line No. 1 amounted to 6.8 hours; the rear spring change on line No. 2 to 2.4 hours, etc. By using tenth hours instead of minutes we simplify the adding of the time in figuring the total cost.

All time is charged to cars at the rate of $1.00 per hour regardless of what the man who does the job is paid. This simplifies the cost keeping and puts part of the shop overhead directly on the cars on which the work is done. Overhead not taken care of in this way is pro-rated over the entire fleet.

Material is also charged on individual 3 x 5-inch slips. Time and material are posted daily on a monthly card which provides for a sub-total every day. In this way the job can be watched closely as the time accumulates on it and if it does not appear to be going as rapidly as it should, an investigation is made.

At the end of the month all amounts charged against cars are posted in the ledger from the original records by totals only. If, at any time, it is necessary to look up the details on a job, the original work slips are gone over. Our monthly report shows the cost of all items per mile and per driver day.

For the guidance of the shop foreman, a 5 x 7-inch card is on file in the shop office, giving a description of each car—engine number, license number, body dimensions, etc. On the back of this card are listed the larger operations which it is desirable to check back on quickly from time to time as cars come into the shop. Opposite each listed operation are eight spaces to mark in dates on which the work is done. Symbols are used to denote the material used.

By looking at the card, we can see the date of the last eight operations of like nature and a symbol showing the material which was used. By glancing at this card the foreman can readily see how long a certain make of brake lining is lasting, how motor overhauls or new ring jobs are holding up, etc.

We feel that keeping the cumulative time on big jobs posted daily as the work progresses is an incentive to the shop foreman and to the mechanics to keep this time down to a minimum. This, of course, has a favorable effect on our costs.

In conclusion, let me say there are two ways to maintain a fleet as far as cost is concerned:

The first, is to set up a budget amounting to what we feel is the maximum which should be spent for automobile maintenance. Then try to maintain as high a standard as possible for the money, but on no account to spend more than the budget provides for.

Second, we can set up a certain definite standard of appearance, of convenience to drivers, of reliability on the road and then strive to maintain this standard as economically as possible, but maintain it even if the cost is high.

The United Parcel Service has always operated under the latter plan, we are pleased to state. In this and previous articles I have attempted to touch on those branches of fleet maintenance which I consider of most importance.

Not only the *FINEST* GASKET PASTE but the *ONLY* ALL PURPOSE SEALING PASTE

. . . IT SEALS *but* NEVER HARDENS

PERFECT SEAL GASKET PASTE is more than a gasket paste. In addition to being the best paste for gaskets by any motor engineering test . . . the fact that it seals but never hardens makes it an all-purpose sealing paste for every purpose. PERFECT SEAL makes a perfect job . . . it makes satisfied customers . . . builds confidence and profits for your business. PERFECT SEAL GASKET PASTE should be in every service station—in every garage. A tube should be on every work bench . . . in every mechanics kit of tools. Use Perfect Seal for a perfect job. We guarantee that it will do the job better. Once you have tried PERFECT SEAL you will be convinced.

On Head Gaskets . . . prevents blow-by, lubricates against friction—permits easy disassembly.

On Studs or Bolt Threads . . . protects against rust and corrosion, permits easy disassembly without breakage.

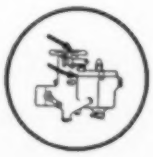
On Battery Terminals and Cables . . . prevents corrosion, will not wash off or deteriorate with heat or cold.

On Internal Brake Parts where grease or oil cannot be used it provides perfect lubrication to moving parts.

On Water Hose Connections . . . not only a positive leak preventative but protects hose from deterioration.

On Cork Gaskets . . . keeps them moist, tough and pliable—permits using several times.

On Carburetor Joints or Flanges it can be spread as thin as .001 inch and is not affected by any chemical fluid.



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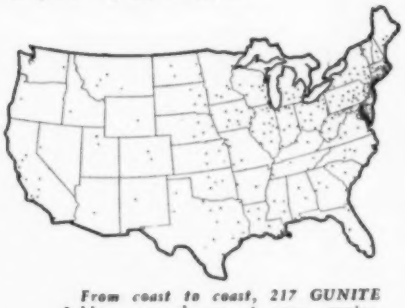

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GUNITE *Cast* BRAKE DRUMS

Effecting Economies in the Fleet

(*Continued from page* 20)

pressure is most suitable. This need not be of greater capacity than 8 ounces as the amount of grease needed to lubricate a pump is very small.

A suction type gun for filling shock absorbers will prove its worth in providing an easy way to accomplish this job. The fluid is quite expensive, and spillage will be avoided if some such means is employed. Transmission and differential grease may be dispensed direct from the drum in which it is received by simply screwing a pump into the head. If this means is not used, a grease bucket should be used. A spray gun attached to the air line will prove indispensable in spraying springs. There are several good ones available in which the flow of atomized oil is adjustable to suit the requirements of the user.

The majority of the equipment just described can be conveniently arranged on a lubrication board which can be made portable by the addition of casters. There are many advantages in this arrangement, in that the board can be taken any place in the shop to do lubrication jobs and the mechanic will have everything at his fingertips. If a grease bay is provided, portability of the board is not necessary. We have found in our larger garages that hydraulic lifts of the axle (or free-wheel) type are indispensable to facilitate greasing.

Before we leave the subject of lubrication, I would like to stress the point that the life of parts properly lubricated is indefinite, and through proper lubrication we can come closer to getting the life out of these parts that the manufacturer has built into them.

●

How We Handle Road Breakdowns

(*Continued from page* 22)

appreciated if we explain that sometimes our trucks are routed quite a distance from home. We feel that since the work has to be done anyway, who not do it right there and then—on the road?

We hold the opinion that if we operated in any other manner, and did not carry a set of extra units and other spare parts, we would need at least four extra trucks, and there would also be considerable time lost in waiting for replacements and other unavoidable delays. As we do it, we have need for only two extra trucks, and we've been working in this manner for over ten years.

Of course, there will be many fleet maintenance men who may not agree entirely with our method of running a fleet. In fact, few opinions on this broad and interesting subject are entirely alike. However, in closing, let us state that this is "actual experience" and if "the proof of the pudding is in the eating," our method of working is one that can bear close scrutiny.

We should like to hear from other fleet operators. No doubt there will be considerable comment forthcoming. And a controversy is one thing that the writer delights in taking part. As before stated, we are passing along our ideas for whatever they may be worth. Let's hear from you, boys!

●

What Trucks for Brewers?

(*Continued from page* 26)

tion, and a proper selection of equipment as to type, size, and make.

Trucks of different makes but of the same gross capacity will show little variation in many of the items

that make up truck costs. The fixed charges, that is, license, insurance, drivers' wages, and garage rent should be the same regardless of make. The same is true of some of the operating or variable charges such as gasoline, tires, and lubrication.

But there are two items that do show a real difference between different makes, a difference some times as high as 100 and 200%. These items are repairs and depreciation. The factors that influence these cost items are the quality built in the truck in engineering design and selection of materials. Quality in a truck that will give more miles or years of economic life means lower depreciation costs. That same quality that gives long life also gives lower repair costs because the period between certain repair operations and major overhauls is much greater.

The delivery of the brewer cannot be measured by the cost of the first six months' operation of his delivery fleet,—it must be measured by the operating cost of the fleet throughout its entire life. That is why the brewers' future costs and profits will be influenced by the trucks he buys today.

There are millions of people in this country between the ages of 21 and 35. To but a small per cent of these millions do the brand names of the old established breweries have any significance. It is mainly with these millions that the old breweries must re-establish their prestige and the new breweries create their market. Advertising is one of the main tools with which this may be accomplished. The delivery truck of the brewer is a valuable advertising medium for this purpose. The brewer who does not recognize this, is losing some valuable low cost advertising. Every load of beer can be a moving advertisement seen by thousands daily.

A great variety of truck bodies have been developed. There is some difference of opinion in the brewing industry as to open type or closed type for case delivery,—the preference seems to favor the closed type. Recently, the closed type body, because of temperature control, is finding some favor in barrel delivery. Special beer bodies developed include the conveyor type for rapid loading and unloading of case beer. The deck type body is a type of body very popular in the carbonated bottling industry, the advantages of which are the elimination of the rehandling and stacking of the full and empty cases. Special truck chasses developed include the double-drop frame for extremely low loading and unloading height.

The importance of the delivery phase of the brewing industry cannot be overlooked by either the brewer or the distributor. It is a vital factor in costs and profits and deserves as serious consideration as other phases of the industry.

●

Some Interesting HC Performance Figures

FUEL savings as high as 29.6 per cent are revealed by motor tests of high compression ratios conducted by engineers of the Ethyl Gasoline Corporation, recently.

A large six-cylinder commercial engine, of the type which must carry heavy loads over steep grades, was employed for the trials. Data was gathered over a range of loads at constant speed and two compression ratios, 4.03 to 1 and 5.48 to 1 respectively, were used.

"The theoretical gain in economy of an engine due to increasing the compression ratio from 4.03 to 5.48 is about fifteen per cent," says an explanatory statement issued by the engineers, "but the ability of the high compression engine to operate the vehicle on many

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SLEET STORMS hit without warning. Icy windshield. Slow driving. Always dangerous. Miles from stores. Schedules delayed. Tough on your drivers' nerves. Fatigue increases accidents.

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This double-purpose device not only removes ice, sleet and wet snow when current is applied—but with current off, the dead air space formed by live rubber seal prevents condensation or mist on inside of windshield at all times. Attached in just a few minutes.

A safety device of prime importance for winter driving—an insurance for safe delivery of loads or passengers.

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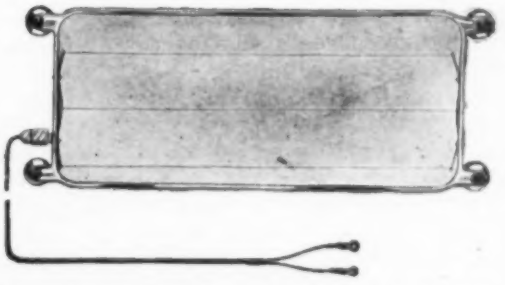

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Convert your present 4-Wheel Trucks at Low Cost!

Maximum payload carried at minimum operating cost; maximum protection to highways; maximum hours on the road without interruption for repairs:—These are considerations worth while in UTILITY Six Wheel Attachments.

Thousands of 4-wheel trucks have been converted—modernized if you please—to efficient 6-wheelers, by the installation of UTILITY SIX WHEEL ATTACHMENTS. They are simple, compact, trouble-free, and economical to install—requiring removal of only one rear spring shackle on each side. (No other truck alterations necessary.)

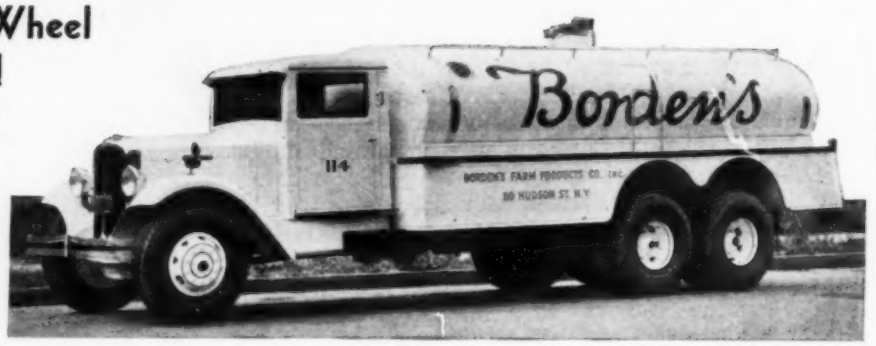

ILLUSTRATION OF RECENT UTILITY SIX WHEEL ATTACHMENT INSTALLATION FOR BORDEN FARM PRODUCTS COMPANY.

Investment One-Third Less

Here is an example of one large fleet owner's experience. To provide a larger capacity, nine 4-wheel trucks were fitted with larger bodies and longer frames, and UTILITY 6-wheel attachments . . . making 10 tons each or 90 tons total payload legal. The cost of the trucks, alterations and attachments brought the fleet cost to $54,000. The same capacity in 4-wheel trucks would have required fifteen 5-ton trucks, costing $5000 each with bodies, or $75,000 and requiring 6 more drivers.

Distributors in all important United States trucking centers. Write for address of distributor in your territory.

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grades in a higher gear and consequently with a wider throttle opening results under the given conditions in an actual mileage gain of practically double this figure.

"The extent to which such very large economy gains influence the overall fuel consumption of a vehicle depends, of course, upon the fraction of its operating time in which high compression permits the use of a higher gear."

Charts of the tests carried out showed that the low compression unit in first gear is capable of supplying considerably more power than is necessary to propel the vehicle on the grade considered, although there is not sufficient power to operate in second gear. Consequently, the governor throttles the air-fuel mixture flow into the engine so that it develops only seventy horsepower, thus driving the truck at seven miles an hour, which corresponds to the governing speed of 2,100 revolutions per minute for the engine.

The high compression engine, utilizing the best grade of anti-knock fuel, will drive the same truck up the same grade in second gear. With the combination of high compression and second gear, the vehicle speed may be increased until the available horsepower is exactly equal to the horsepower required, which happens to be at a speed just slightly less than the governed speed of the engine. Consequently, the high compression truck climbs the grade in second gear at a little more than fourteen miles an hour, developing 142.5 horsepower as it does so.

"It is shown," the statement continues, "that the low compression engine developing seventy horsepower at the reduced throttle opening consumes 0.76 pounds of fuel per horsepower hour or at a total fuel consumption rate of 53.2 pounds per hour. Since the vehicle speed is seven miles per hour, the fuel consumption per mile is 7.6 pounds.

"The high compression engine, however, operating at nearly wide open throttle develops 142.5 horsepower at a specific fuel consumption of 0.53 pounds of fuel per horsepower hour. Since the vehicle speed is 14.12 miles per hour, this results in a fuel consumption per mile of 5.35 pounds, or a decrease of 29.6 per cent below the low compression fuel consumption rate for the same grade."

●

Truck Pays for Itself

IN sixteen months E. F. Mueller of Grand Mound, Iowa, and his partner Schwensen have made 272 trips to Chicago hauling livestock to the stock yards, a total of 83,000 miles.

Their truck easily handles 80 hogs weighing 250 pounds each, making the run in eight hours. After an hour for unloading and refueling and a square meal they start back, usually making four trips a week.

In Mueller's opinion, the number of trucks bringing livestock to the yards has nearly doubled in the last two years, and should increase much more as shippers are becoming more convinced of the reduced shrinkage in transit resulting from an overnight haul as compared with the extra handling and longer time required for rail shipment.

In this period of service, he points out, the truck has not only paid for itself, and earned a fair income for the owners, but has helped shippers to avoid losses from market drops while in transit and by always having the load there in good condition to be sold early in the morning. The truck is a Reo Speed Wagon, but we don't know the model.

Safety Programs DO Reduce Accidents

By A. E. Lundstedt,
Claim Agent, Bowman Dairy Co., Chicago, Ill.

ACCIDENT reductions of 40 per cent, 50 per cent and even more within a single year after a commercial vehicle fleet inaugurates an intensive safety program are quite common. I am told that one bus company located in a large eastern city reduced its rate 64 per cent last year; also that a large bakery along the Atlantic Coast had a reduction of 59 per cent; and that a large fleet of passenger cars and trucks operated by a public utility company decreased its rate 49 per cent.

The National Safety Council, through its Second National Fleet Safety Contest, has accident data for 602 fleets with more than 41,000 vehicles in use and operating 583,000,000 miles during the fiscal year 1932-33. This represents a sizable exposure and we can place considerable confidence in the accuracy of the figures. The 602 fleets, which consist entirely of either gasoline or electric motor driven vehicles, experienced 3.04 accidents per 100,000 miles during the fiscal year. In other words, an accident occurred for about every 33,000 miles of operation.

It is a pleasure to report that accident rates were materially reduced last year. Accidents per 100,000 vehicle miles declined 37 per cent in comparison with 1931 and this improvement, together with a smaller reduction in 1931, makes a total decrease of 41 per cent since 1930. Exactly the same fleets were used for both years in making the annual comparisons, so this change is a reliable indication of what happened in a very large exposure.

Considering the three principal types of motor vehicle fleets, commercially used passenger cars had the best experience, averaging 2.60 accidents per 100,000 vehicle miles and commercial trucks had the worst records, averaging 3.07.

Rates among nineteen different types of commercial trucks ranged from 1.99 for petroleum fleets to 6.95 for units engaged in hauling fuel. The rates of fleets operating mostly in urban sections are, on the whole, higher than for vehicles used mostly in rural areas.

An examination of individual fleet records indicates, of course, that there are many possibilities for improvement in every classification. Rates for a single group, for instance, vary from 0.76 to 25.07 with an average of 2.77. A reasonable goal for a high-rate is the average for its size and type.

●

Interesting Fuel Test With Ford V8

A FULL spark advance adjustment which gives full power at all car speeds is possible with motor fuel containing tetraethyl lead, it was shown by experiments conducted recently at the Detroit engineering laboratories of the Ethyl Gasoline Corporation. When using ordinary motor fuel it was found necessary to retard the spark in lower speeds in order to avoid knocking, the engineers state.

A 1933 V-8 Ford was used in the tests. The distributor brake was automatically released on the car using ordinary fuel when it reached twenty-three miles per hour, to give full spark power for both cars.

The advantage of the full spark advance, which is accomplished by completely releasing the distributor brake, is quicker acceleration from a low speed. Using tetraethyl lead, car speed was increased from ten to fifty miles per hour in 1.05 seconds less time than with ordinary gasoline because the full spark advance curve

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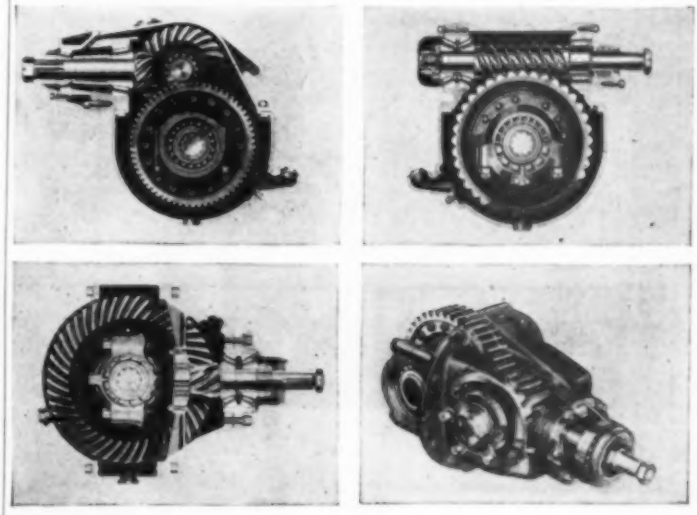
No claim we can make for these axles is as convincing as their performance in your vehicles will be.



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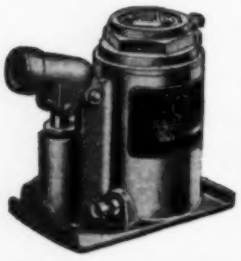

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A full line of hand jacks—1 to 75 tons—for road, shop, and industrial work. Also floor and curb models. Ask your Jobber Salesman. Write for literature.

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Shows how to do the job
In the maintenance of automobile, truck, bus and taxicab fleets.

An authoritative 32-page book showing how to replace flywheel ring gears, true brake drums, rebore connecting rods, true differential flanges, finish round and cam shaped pistons, and six other major jobs in the latest, practical, accurate way. Very valuable to the Truck, Bus, and Taxi Fleet Maintenance Shop—The Motor Service Shop—Brake and Wheel Service Shop and General Repair Shop. Sent Free, postpaid, on request. Ask for Motor Mechanics' Hand Book No. 33

South Bend Lathe Works
875 E. Madison St., South Bend, Ind.

was available at all speeds. The retarded spark, necessary at low speeds with ordinary fuels to avoid knocking, delayed the car in reaching its maximum speed.

The importance of getting off to a fast start was shown by the fact that the Ford using tetraethyl lead climbed a 12 per cent grade in fifteen seconds less time than the one using ordinary gasoline, the first car reaching an approximate speed of twenty-eight miles per hour, and the second, of seventeen miles per hour. Tetraethyl lead, permitting a full spark advance at all speeds without a knock, enabled the car to reach its maximum speed quicker, it is claimed.

In tests made on a 7 per cent grade and on level ground, the car using tetraethyl lead reached its maximum speed first, although the difference in time was not so noticeable because both cars reached twenty-three miles per hour in a short time and thereafter had identical spark adjustments. Acceleration tests were made with the same passenger load and the same distributor housing setting for each fuel.

●

Symposium on Motor Lubricants

THE seven technical papers and extensive discussion which make up the published Symposium on Motor Lubricants were presented recently at a joint meeting of the A. S. T. M. and the Metropolitan Section of the Society of Automotive Engineers. The symposium was arranged by A. S. T. M. Committee D-2 on Petroleum Products and Lubricants. Subjects covered include: service requirements, viscosity, carbon deposits, oil consumption, service changes, engine design as affecting oil performance, etc.

The paper on "Carbon Deposits in Gasoline Engines"

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●

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LEONARD HICKS, *Managing Director*

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presents a review of available data on this problem, particular attention being given to the influence of lubricating oils on deposits. Several tests which have been proposed to predict carbon-depositing tendencies of oils are critically discussed.

The relation of the A. S. T. M. pour test to service requirements of oils is outined in another paper, while a third presentation covers the factors involved in the relationship between viscosity limits of crankcase lubricants and service requirements.

A review of the existing data on changes which crankcase oils undergo during service is presented. There is considerable discussion of this paper included in the printed symposium.

The paper on "Oil Consumption in Motor Car Engines" correlates recent findings on consumption of oil and discusses the more important conclusions resulting therefrom. The effects of engine speed, engine design and oil properties are outlined and conclusions are presented based on motor dynamometer, chassis dynamometer and road tests.

Other topics discussed in the symposium are "Factors in Engine Design Which Affect Oil Performance" and "Aircraft Engine Lubrication". This latter paper is confined entirely to the practical application of available oils in aircraft engines and the problems encountered.

Many of the problems discussed in the symposium are controversial ones and the participation in the discussion by outstanding technologists in the petroleum and automotive industry resulted in a general advancement toward agreement on some of these factors.

The authors have used diagrams and tables extensively to give a quick and clear presentation of data. The symposium covers 121 pages. Copies are available in heavy paper binding at $1.25 or in cloth binding at $1.50 from the A. S. T. M., 1315 Spruce Street, Philadelphia, Pa.

●

If You'd Use Alcohol—In Pontiacs

FLEET operators having new Pontiac straight-eights in their fleets will be able to use alcohol as an anti-freeze in these cars, the factory points out, without danger of excessive loss by evaporation. This is achieved, by filling the radiator to only two-thirds capacity. The empty upper section of the radiator then serves as a condenser, returning the vaporized alcohol to liquid form and so preventing its escape.

In the cross-flow radiator the hot and cool water tanks are placed vertically at either side of the honeycomb instead of above and below. The hot water tank is sealed at top and bottom, with side openings leading directly into the horizontal passages of the radiator.

The cooling system is connected with the outside air only by a small elbow of the cool water tank which extends above the radiator core to the filler neck. This presents the one possible avenue by which alcohol vapor might escape after returning from the motor passages. But, before reaching this point, the vapor first must pass across through the radiator core where it is chilled and condensed. The process is speeded when the Pontiac radiator—which has one-third greater cooling capacity than required in winter—is left one-third empty, the unneeded upper portion thus becoming a quick condensation chamber.

The proper radiator level for the alcohol solution is established by filling to a point slightly above the test cock on the vertical hot water tank. Many owners who follow this practice report that one filling usually suffices for an entire winter of driving.

Do you throw away your dirty shirts?

Of course not, you simply have the dirt removed and then use them again—and the same thing can be done with your used motor oil. Crankcase drainings, like dirty clothes, are not worn out. The only thing that makes them unfit for use is the presence of foreign matter that has accumulated through use. These impurities can be entirely removed for only a few cents per gallon with a SKINNER OIL RECLAIMER, leaving pure motor oil with all the lubricating qualities it had when new.

Reduce your maintenance costs and cut your oil bills 40 per cent to 60 per cent. Fill in the coupon below for facts and figures showing exactly what a SKINNER in your garage will do for you.

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Please tell us definitely with facts and dollar-and-cents figures, what a Skinner Reclaimer will save us in cash and oil.

We purchase approx. _____ gals. of oil per month
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Our electric current rate is _____ per kilowatt hour
Signed _____ 11-33

Now—Fleet Owners Charge Batteries Without Touching Them—no removing of floor boards, no removing of batteries, no fussing with battery connections.

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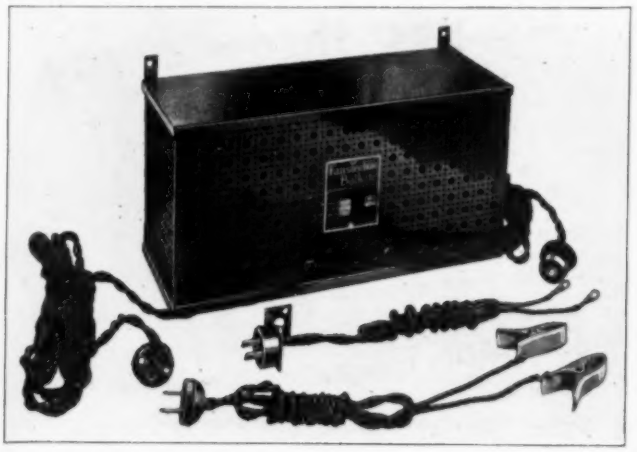
Automotive Battery Chargers

No bulbs. No replacements. Nothing to get out of order. Operate 7 to 9 years without renewals. No dropping off in output.



Above—Model E-10. 6 Volts. 5 Amps. Extra charging connectors available for equipping any number of cars or trucks for charging one at a time.

Below—Model E-20. 5 Amps. For charging one to four 6-volt batteries.

Send coupon for complete information and put an end to your battery charging troubles

FANSTEEL PRODUCTS CO., Inc. F.O. 11-33
North Chicago, Ill.

Mail complete information to:

Firm .....

Individual .....

Size of fleet .....

Address .....

Actual and Rated H.P. Discussed

DO you know what horsepower is? "Ask this question of any ten men," says Stuart G. Baits, chief engineer of the Hudson Motor Car Company, "and you will probably hear 'yes' ten times. But when they begin to tell what horsepower is, you will get a wide variety of answers, several of which may be correct."

Automobile advertisements, Mr. Baits points out, talk about horsepower in sizeable figures—as 75, or 94, or 113, or even 200-plus. And these are actual, working horsepower, measured by brake tests. But when the car owner (in some states) pays his yearly license fees, he is pleased to be able to pay on a basis of possibly 24, or 33, or 46 horsepower. The highest taxable horsepower for any American car is 62.5. This, the motorist will no doubt tell you, is another kind of horsepower. He may also know that it is calculated by a mathematical formula, (Bore x Bore x No. of Cylinders, divided by 2.5) usually called the S. A. E. or the N. A. C. C. rating.

"There is still, however, a misconception in many minds that there is a definite relation between 'S. A. E. horsepower' and actual, or brake, horsepower," Mr. Baits declares. "But in fact, there is no relation. What is called the 'S. A. E. rating' was formulated about 1901 by a group of manufacturers because accurate tests of actual horsepower were not then possible, and some standard of power rating was necessary for taxing and other purposes. As a method of determining actual power, it is as obsolete as a 1901 automobile would be today. It is based only on the bore and number of cylinders, with no consideration of the stroke, compression, valves, ignition and many other vital factors. It is useful today as a convenient basis for taxation, and for no other purpose whatever. Certainly it is no indication of actual, working power."

"For example," the Hudson engineer continued, "the automotive journals show two makes of cars with S. A. E. ratings of 36.3 and 36.4, respectively, yet their actual horsepower ratings are 80 and 156. It works the other way, too. Two other makes show 75 actual horsepower each, but have taxable horsepower ratings of 23.4 and 30. For one other example, the most powerful American car develops 265 actual horsepower and has a taxable rating of 45. Seven other American cars have higher S. A. E. ratings, although some of them have less than two-thirds that much actual power.

●

Minimizing Icy Pavement Skids

THE hazard caused by slippery roadways is one of the important problems demanding the attention of fleet maintenance engineers at the present time. When it is realized that the lives of the public and much equipment are endangered, it becomes most essential to find a solution to this problem at once. The formation of ice on the pavement surface offers one of the worst conditions and most difficult to combat. The problem of securing satisfactory traction so that travel may proceed safely requires the prompt and careful attention of the engineer, or other official under whose jurisdiction this subject comes.

Materials such as coarse sand or cinders, thoroughly embedded in the ice so as not to be easily blown off the surface by the wind or thrown off by vehicles, have been found the most useful to secure satisfactory traction. Cinders have proven to be probably the best material available, but due to the difficulty of obtaining them, coarse sand or similar materials are often substituted. (The above is recommended in conjunction with a good set of tire chains, of course.—Editor.)

Truck Owners: KEEP STRAIGHT WITH THE CODE

Here's the Best Way to Do It

LET EACH TRUCK keep its own record, automatically. Shorter hours, higher wages, strict accounting for *time* and *overtime* — the SERVIS RECORDER will take care of this for you, because, as you know, the SERVIS RECORDER is the *Time Clock* of the motor truck.

Look Out for Wasted Time!

This chart shows up all the delays.

Here's a stop of 2 hours!

But, Where Is The Money Coming From

to pay higher wages for shorter hours? You can't get all of it out of your customers; *some* of it has got to come out of stricter management of your own business. *Truck Time* has suddenly been made more valuable than ever. Save that truck time, prevent wasted time, keep a fair and square record on overtime, by means of the SERVIS RECORDER.

You know what the SERVIS RECORDER is—automatic, accurate, fair to the driver, promoting better team work between driver and employer. You've seen our story before, but have you *acted* on it? If not, now is the time. Here's a suggestion—ask for our Bulletin:

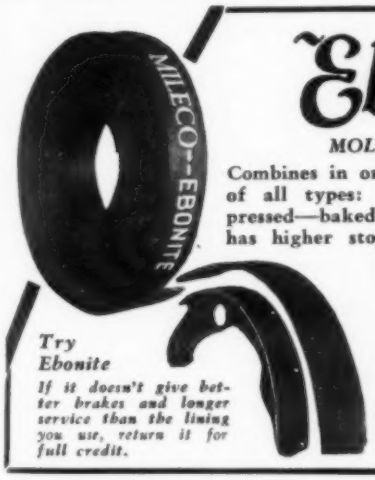
"Ten Ways of Getting More Work Out of Motor Trucks"

THE SERVIS RECORDER
"Keeps Trucks Busy"

The Service Recorder Company
1422 EUCLID AVE. CLEVELAND, O.

Ebonite

MOLDED IN ROLLS



Combines in one lining the best features of all types: is woven,—molded—compressed—baked. Dissipates heat faster, has higher stopping power, for it contains far more compound, far less asbestos. Holds its firm soft pedal. Reduces scoring, pedal fade, adjustments and squeaks. Will give long and superior service.

Try Ebonite

If it doesn't give better brakes and longer service than the lining you use, return it for full credit.

L. J. MILEY COMPANY, Inc.
1462 S. Michigan Ave., CHICAGO

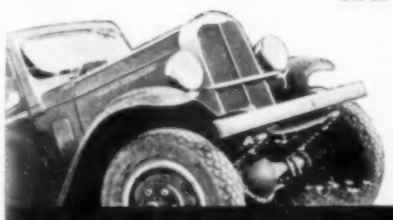
U.S AXLES

A complete line of superior quality axle shafts for all makes and models of passenger cars, trucks and buses. A special engineering service to study your individual problems is available to all responsible fleet operators.

Write for complete information

The U. S. Axle Co. Inc., Pottstown, Pa. U.S.A.

THE HIGHEST STANDARD OF TRUCK PERFORMANCE EVER KNOWN



Advanced all-wheel-drive traction gives far greater payload results, on or off the highway.

•

Complete new all-wheel-drive line—4 series, 21 models, 48 types—1½ tons and upward.

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New low prices comparable to rear-wheel-drive prices. Write for complete facts without delay.

MARMON-HERRINGTON
Factory and General Offices, Indianapolis, Ind.

STOP
STUD BREAKAGE

The New Van Norman Jumbo Stud Puller gets 'em out quick and easy. Drop it over a stud and turn it with a wrench,—no resetting, no undue breakage, no unnecessary marking.

VAN NORMAN Machine Tool Co.
SPRINGFIELD, MASSACHUSETTS

Say "I saw it in FLEET OWNER"—It Helps!

The NEW
SPOKE
CELORON
TIMING
GEAR

IMMEDIATELY AVAILABLE

From
NAPA WAREHOUSES AND DISTRIBUTORS

KRAMER Certified cooling RADIATORS

for TRUCKS BUSSES and TRACTORS

OVALTUBE TUBULAR and TURBO CELLULAR CORES

Complete Radiators

TRENTON AUTO RADIATOR WORKS
Trenton, New Jersey

ON MY WAY TO NEW YORK AND THE PICCADILLY

. . best hotel I know! Near everything, just 200 feet from Broadway. Modern, hospitable, and comfortable. Like the Manager, like the rates—$2.50 single, $3.50 double, for a room with bath!

THE HOTEL -
PICCADILLY
45th St. • W. of Broadway • New York
WILLIAM MADLUNG, Mgr.

Mr. President:

DOES your Financial Statement show a Deficit? Are your Truck Deliveries causing part of this Deficit?

If so, you need a Man who can cut your Trucking Costs to a Minimum! The day is past when a Mechanic can supervise a Fleet costing thousands of dollars.

Each Fleet needs an Executive who can analyze the complicated problems of Cost Accounting, Taxation, Personnel and Sales Cooperation. He must be familiar with the latest practice in Maintenance and Operation and the modern high components of today's Transportation requirements.

Such a man is now available and would like to have the opportunity of discussing this problem with you. Strict confidence will be appreciated and respected. Address Box 815, c/o Editor, FLEET OWNER, 90 West Street, New York, N. Y.

YESTERDAY AND TOMORROW
Under One Roof

The elegance of yesterday and the modernity of tomorrow are yours at the famous Auditorium Hotel — completely modernized at a cost of over $100,000.

All the distinctive characteristics of superlative living, the high standards of service, the inimitable food and the distinguished Michigan Avenue location are offered you today in a new dress at a daily rate from $1.50 single without bath—from $3 single with bath—double from $5.
Write for illustrated folder

ARTHUR J. NEWMAN . . . . . MANAGER
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CHICAGO

✓ *Send for Our Booklet*
"A New Way to Ride on Rubber"
It tells why you need

SPONGEX
(Sponge Rubber)
Honeycomb Cushions
THE MOST COMFORTABLE CUSHIONS FOR YOUR TRUCKS AND BUSES
THE SPONGE RUBBER PRODUCTS CO.
Derby, Connecticut

Free Book on Aluminum Truck Bodies

OVER 50 pages of practical, helpful information about aluminum truck bodies—detailed construction drawings, 17" x 23", printed on paper from which blueprints can be made—are included in a new book: "Alcoa Aluminum for Truck Bodies."

Free to executives, interested in the manufacture, distribution and operation of trucks and truck bodies, it's a book these executives will read—*and use*. It contains:

1. Operating and weight-saving data on aluminum bodies now in use, including dump bodies, vans, truck tanks for gasoline, milk and other food products. (Data furnished by the operators themselves.)

2. Detailed information on how to build and design such bodies to obtain lowest possible weight combined with high strength and long life. This includes a list of the alloys of aluminum to be used for each particular purpose, and the sizes and special shapes available. Also notes and detail drawings of dump, van, freight, insulated, and refrigerated bodies, with directions for fabrication, joining, painting and almost every step in the construction process.

As the supply of these books is limited, it is recommended that fleet operators desiring a free copy should write for one immediately. This can be obtained from Aluminum Co. of America, 1861 Gulf Bldg., Pittsburgh, Pa.

●

Longer Life for Valve Seats

SEVERAL of the large bus and truck manufacturers have recently standardized on hard-faced exhaust valve seats because thorough road tests have shown that after runs of 100,000 to 150,000 miles, no regrinding or refinishing of the valves is necessary and the seating surfaces are in as good condition as when installed. One prominent manufacturer has standardized on this type of exhaust valve seat in all his latest six-cylinder engines because hard-faced seats have been found to last longer, require less attention, reduce valve grinding and adjustments to minimum, conserve fuel and maintain the efficiency of the motor.

These are remarkable performances when considering the severe conditions under which bus and truck motors operate. Where motors are operated continuously at full load it is conservatively estimated that ordinary cast iron seats have to be reground every 10,000 miles. The fact that hard-faced valve inserts will operate for 10 to 15 times this mileage without regrinding means lower gasoline consumption, lower compression losses and increased power, mileage and all around motor efficiency. The performance of hard-faced valve seats in truck and bus motors under these severe conditions indicates that such seats will outlast the life of passenger car motors.

In the exhaust valve seat of the threaded removable type, the beveled seating surface can be faced with Stellite. The layer of abrasion-resistant alloy is applied by means of the oxy-acetylene process. The seat is rough ground after welding and is then threaded on the outside and provided with serrations on the inside. After this, it is locked in place in the counterbore by set screws or dowels, and a high-speed grinding wheel, held concentric with the valve stem, is used to finish the hard-faced seating surface.

Further information concerning the application of Haynes Stellite to not only valve seats, but other wearing parts, will be gladly sent on request. The Editor will see that this information is placed into your hands without cost or obligation.

ALWAYS READY FOR USE

Vellumoid gaskets never deteriorate in stock and can always be treated roughly without injury—they are applied without shellac and are easy on and easy off, with no scraping of the flanges.

Whether you use Vellumoid ready-cut gaskets, or cut or tap out gaskets from sheet Vellumoid, you know you have a quality product which makes tight connections that stay tight and protect your work.

Ask your Jobber

VELLUMOID
THE REAL REPLACEMENT GASKET MATERIAL

THE VELLUMOID CO., Worcester, Mass.

Believe It or Not

You need never change the oil in your engine after it is equipped with a

U. S. OIL FILTER

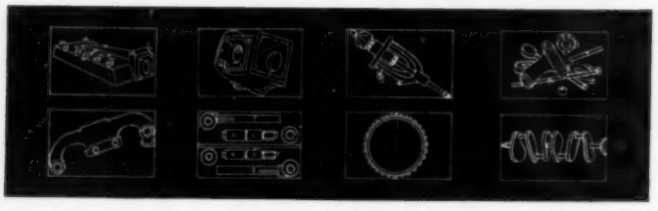
Sold to you on a wide-open money-back guarantee if you prove this statement incorrect.

U. S. OIL FILTER has just been adopted as standard equipment by the Checker Cab Mfg. Corporation.

UNITED STATES EQUIPMENT CORPORATION
603 FOURTH AVENUE
NEW BRIGHTON, PENNSYLVANIA

Forced to give them up at the point of a gun, there is little that you can do about it. But poor parts, that don't stand up in service exact a greater money toll from garages than all the holdup artists put together. Loss from labor on jobs that have to be done over due to parts failure, customers disgusted and lost may seem small in each case, but soon mounts to an enormous total.

You *can* prevent these losses. Guard yourself against loss of money and of customer confidence. Insure your profits by using the best quality parts — *Wohlert Quality Parts.* Ask your jobber about them.



Wohlert Quality Parts include: Hardened and unhardened *Starter Gears* for all cars; *Cylinder Heads* for 85% of cars on the road; *Manifolds* for Ford, Plymouth, Hudson; *Transmission, Clutch* and *Flywheel Housings* for Ford and Chevrolet; *Water Pumps* for Ford, Chevrolet and others; *Oil Pump* for Chevrolet; *Crankshafts,* for Ford; *King Bolts* for 85% of all cars; and the *Small Parts Group* for Ford and Chevrolet.

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Mating and Lapping

. . . . and WHAT ELSE?

Mating and lapping are essential in drive and pinion gear sets to insure quiet operation and proper installations. Therefore, every Double Diamond Gear set is mated and lapped.

But mating and lapping alone cannot make a satisfactory gear set. Other fundamentals in gear manufacture must be observed with equal care to produce gears built to finest original equipment standards.

Not less than 3½% nickel steel must be used in both drive gear and pinion to take the shock and strain which modern speeds and driving conditions impose on rear axle gears.

Upset forgings—though more expensive than the old slab-type forging—must be used to give *every* tooth of the gear the same grain structure (and hence give maximum strength to carry its load). A gear is no stronger than its weakest tooth.

Gear and pinion blanks must be copper-plated to accurately control the carburization process of heat treatment—to produce a hard wear-resisting surface on the face of the teeth where wear-resistance is needed—and to retain the tough, shock-resistant body of the original forging at every other point.

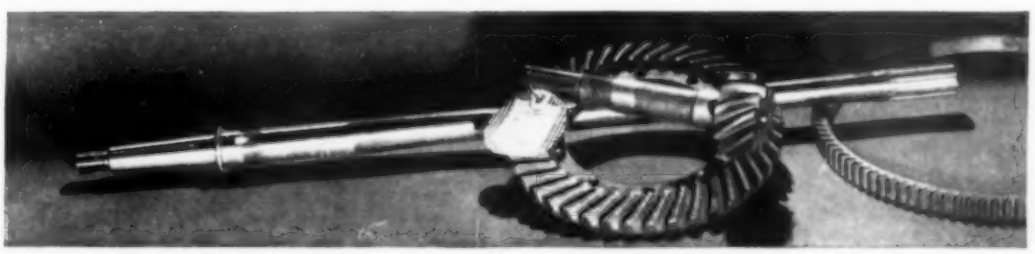
DOUBLE DIAMOND Drive and Pinion Gears fulfill every one of these finest original equipment standards. It is for this reason that they can be depended upon not only for quick, quiet installation—but for long-lived, satisfactory service *after* installation. Double Diamond Gears are sold at list prices the same as those of car manufacturers, by a nation-wide system of warehouses assisting more than 700 jobbers to give you prompt and complete service.

AUTOMOTIVE GEAR WORKS, Inc., Richmond, Ind.

Manufacturers also of Double Diamond Axle Shafts and Double Diamond Hardened Steel Flywheel Gears

Double Diamond

MATED and LAPPED DRIVE AND PINION GEAR SETS



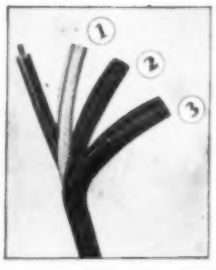
TOUGH GOING...THAT'S WHERE

THE STRENGTH OF 347B IS NECESSARY

When it comes to the big jobs—grueling service day-in and day-out—the ignition system is a vital factor. And efficient ignition depends on the condition of the cables. Ignition cable failure can mean costly delays and repairs, often stopping all work on the job.

Packard's super duty cable—347B with its tri-ply protective sheathing, is specially built for the tough jobs. Fleet operators have found it essential to long steady service, low maintenance costs and profit.

Equip all your trucks with the cable designed for heaviest duty—Packard 347B. Packard Electric Corporation, Warren, Ohio.



Built for Super-Duty Protected with Tri-ply Sheathing

1. Lacquered cotton braid
2. Varnished cambric tape
3. Strong braid, multiple "Lac-Kard" processed

Packard

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TRADE MARK

IGNITION CABLE • BATTERY CABLE • LIGHTING CABLE

The Standard Wiring Equipment of the Automotive Industry